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Accompanying the document

COMMISSION DELEGATED REGULATION (EU) …/...

supplementing Directive (EU) 2018/1972 of the European Parliament and of the Council by setting a single maximum Union-wide mobile voice termination rate and a single maximum Union-wide fixed voice termination rate

{C(2020) 8703 final}

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Glossary

AS	Application Server
BEREC	Body of European Regulators for Electronic Communications
BU-LRIC	Bottom Up Long Run Incremental Cost
CPNP	Calling Party Network Pays
CPP	Calling Party Pays
CDMA	Code Division Multiple Access
CA	Competent Authority
ENMS	Electronic Number Mapping System
FTR	Fixed termination rate
FAC	Fully Allocated Costs
FDC	Fully Distributed Costs
IC	Inter-Connection
IP	Internet Protocol
I-CSCF	Interrogating Call Session Control Function
IMS	IP Multimedia Subsystem
LTE	Long Term Evolution
MNO	Mobile Network operator
MTR	Mobile termination rate
MVNO	Mobile Virtual Network Operator
NRA	National Regulatory Authority
OTT	Over the Top
PSTN	Public Switched Telephone Network
RPP	Receiving Party Pays
RRM	Relevant Markets Recommendation
S-CSCF	Serving Call Session Control Function
TRR	Termination Rates Recommendation
UMTS	Universal Mobile Telecommunication System
VoIP	Voice over IP
VoLTE	Voice over LTE

1 Introduction

This Staff Working Document accompanies the Delegated Act (a Delegated Regulation) setting a single maximum Union-wide mobile voice termination rate and a single maximum Union-wide fixed voice termination rate under Article 75 of the European Electronic Communications Code (the "Code" or the "EECC")[1] .

The following sections provide explanations regarding:

- the termination services, the market and regulatory context prior to the inclusion in the Code of a provision requiring the Commission to adopt single maximum Union-wide voice termination rates, and the content and rationale of Article 75 procedure followed in the adoption of the Delegated Regulation (section 1);
- the scope of the Delegated Regulation, including the definition and the treatment of calls originated from third country-numbers and terminated to Union-numbers (section 2);
- details of the fixed and mobile cost models used in the setting of the single maximum Union-wide voice termination rates and the explanations on the general methodology (section 3);
- the setting and implementation modalities of the single maximum Union-wide mobile voice termination rates (section 4);
- the setting and implementation modalities of the single maximum Union-wide fixed voice termination rates (section 5).

The Delegated Regulation only concerns price obligations. National Regulatory Authorities (NRAs) will not, after its entry into force, be able to impose price controls obligations as regards the fixed or mobile termination rates for termination services provided in their national territory. Non-price obligations imposed by NRAs when regulating markets in their territory, are outside the scope of this Regulation. The Review of the Recommendation Relevant Market[2] addresses the termination markets and provides clarifications on the possible instruments that NRAs may use to impose non-price related obligation on the termination providers.

The Delegated Regulation applies directly to the Union and will apply to the European Economic Area (EEA) after its incorporation in the EEA agreement.[3]

1.1 Termination services

Voice termination rates are the wholesale rates that electronic communications operators charge each other to terminate calls on their respective networks ("termination rates")[4]. The establishment of a voice call between two subscribers who are served by different operators requires the use of both operators' networks. The operator who serves the calling subscriber is called the 'originating operator' while the operator who serves the called subscriber is called the 'terminating operator'. The terminating operator will connect the call from the point of interconnection with the originating operator in its network up to the device of the called

[1] Directive (EU) 2018/1972 of the European Parliament and of the Council of 11 December 2018 establishing the European Electronic Communications Code (the EECC or the Code), OJ L 321/36.

[2] https://ec.europa.eu/digital-single-market/en/news/recommendation-relevant-markets

[3] For clarification, in relation to the replies to the public consultation, reference is made to the EEA given that the question asked included that term. Likewise, the cost model also includes data from EEA countries (not only Union countries).

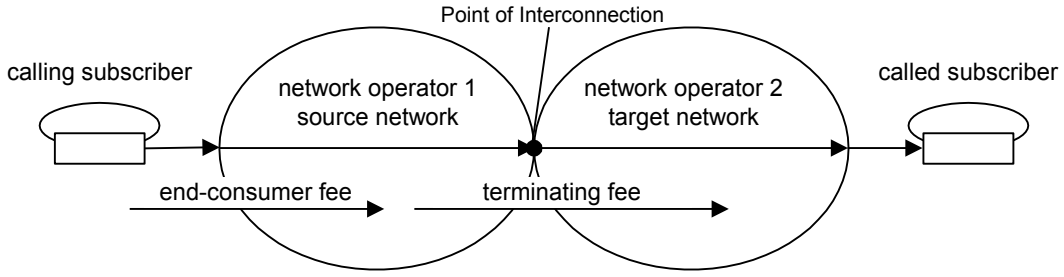
[4] Fixed and mobile termination rates relate only to voice calls. They do not relate to data services.

subscriber. This service is called voice call termination and it can be provided only by the operator serving the called subscriber, i.e. by the terminating operator. Each operator has full control over terminating voice calls to its own subscribers. Thus, each operator has a monopolistic position on the market for terminating calls on its own network and has the ability and incentives to set the wholesale price for terminating calls at a level that is significantly above-cost.

Wholesale voice termination services ("termination services") represent a non-replicable input for the provision of retail voice services, given that voice termination can only be supplied by the network provider to which the called party is connected. There are no demand or supply substitutes for voice termination on an individual network. Therefore, each network represents a separate relevant market in which each operator is a monopolist for the calls terminated in its network. In addition, under the calling party pays ("CPP") principle[5], which is the one mostly used in the Union, the party initiating a call is charged but the receiving party is not. The wholesale termination rate is paid by the originating operator to the terminating operator. The originating operator incorporates this cost into its retail prices, thus it is ultimately born by the caller (i.e. not by the called party).

In the context of interoperable networks, fixed and mobile interconnections follow a 'two-way' model, whereby an interconnection agreement needs to be negotiated by the interconnecting operators A and B, to deliver calls from operator A's customers to operator B's customers, and vice versa. Figure 1 shows a typical calling party pays (CPP) termination arrangement for the termination of calls (showing only one-way interconnection).

Figure 1: termination according to calling party network pays



Source: Rundfunk und Telekom Regulierungs-GmbH (RTR) (Austrian Regulatory Authority for Broadcasting and Telecommunications)

This system raises two main competition concerns. Firstly, due to their monopoly position in terminating calls in their networks, operators, in the absence of regulation would be able to extract excessive profits at the wholesale level[6]. Secondly, operators have an incentive to charge high rates to increase their rivals' costs. This is possible because the termination rate charged by an operator is a cost to another operator,

There are also other, less market-specific competition concerns affecting the wholesale termination markets. Operators with many customers may have an incentive to refuse terminating calls from smaller operators. This would make the smaller operators' network much less attractive to (potential) customers. More realistically, operators may not refuse[7] but

[5] Or "calling party network pays" (CPNP) at the wholesale level, according to which the termination charge is set by the called operator and paid entirely by the operator of the calling subscriber.

[6] Commission Staff Working Document accompanying the Commission Recommendation on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU, Explanatory Note, C(2009)3359, SEC(2009) 599.

[7] The possibilities to refuse interconnection is limited by the fact that according to the regulatory framework the NRAs have the powers to intervene in order to ensure end-to-end connectivity.

make it more difficult and costly to interconnect to and terminate calls in their networks. Such behaviour may qualify as constructive refusal to supply or discriminatory behaviour under competition law.

High termination rates, even if traffic is symmetrical, would lead to anti-competitive outcomes at least in two ways. First, high wholesale termination rates would prevent otherwise possible unilateral decreases in retail prices, leading to high retail prices. This is because high termination rates would act as a price floor for operators and reduction in retail prices below termination rates would lead to monetary losses at least in the variable part of a two-part retail tariffs. Second, high termination rates, in conjunction with lower prices for on-net[8] calls would incentivise mobile customers to keep a large proportion of their calls on-net, leading to higher barriers to entry and expansion by smaller operators which, due to their size, would be unable to match such high on-net share of calls.

The application of different termination rates across the Union leads to distortions in the **functioning of the internal market** for reasons explained below.

Differences which are not due to cost differences in termination rates across the Union can lead to **cross-subsidisation** of operators and ultimately consumers in countries with higher termination rates, to the detriment of operators and end-users in countries with lower termination rates.

In general, and independently on whether rates are based on efficient costs, when an operator from a country with lower termination rates exchanges traffic with an operator from a country with higher termination rates, even if the incoming and outgoing traffic is equal, operators from high termination rates countries receive higher remuneration for the same service.

Further, different wholesale termination rates may distort consumer behavior by reducing the volume of calls to countries with high rates.

Moreover, as acknowledged by BEREC[9], termination rates higher than the efficient costs could have a **negative effect on the development of pan-European offers**, proposing uniform pricing schemes for international calls to networks across the Union, regardless of the Member State where the end user is based. The lack of uniform pricing, together with the high cost of calls directed outside the border of each Member State – for which historically high termination rates are at least partly responsible, constitute an obstacle to voice communication within the internal market. This represents a barrier affecting not only the electronic communications sector, but all sectors that rely on voice communications for their commercial activities.

Further, unjustified differences in the level of rates among Union countries in two-sided and interdependent markets such as termination also **distorts investment incentives**. It creates regulation-induced asymmetrical revenue streams between Member States, which distort efficient investment decisions across Member States borders.

The unequal regulation of termination rates, i.e. based on the different principles, constitutes a **barrier to trade in the internal market**. Full harmonisation of termination rates is intended to foster market integration by limiting net payments (and cross-subsidisation) between operators in different Member States that are due to different levels of national termination rates rather than to different call volumes, thereby reducing barriers to intra-Union trade.

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[8] "On-net" refers to calls terminated on the originating operator's own network, as opposed to "off-net" calls, which are terminated by a different operator than the originating operator.

[9] BEREC response to the European Commission's public consultation on the evaluation of the Termination Rates Recommendation, BoR (16) 100, p. 8-9.

Finally, divergent approaches to termination rates among Member States **undermine the predictability of regulation and legal certainty** within the Union, with operators not being able to rely on consistent rules for voice traffic that cross Member State borders. Regulatory predictability reduces uncertainty for investors, which in turn reduces the return required by the investor – leading to a larger willingness to invest.

1.2 Regulation of termination rates in the Union

Wholesale mobile termination rates ("MTRs") and wholesale fixed termination rates ("FTRs") have been regulated in the Union for around 20 years. These markets were included by the Commission in the 2003 Recommendation providing a list of markets susceptible to ex ante regulation[10]. The Commission recommended NRAs to continue regulating these markets in the subsequent Recommendations on relevant markets issued in 2007[11] and 2014[12].

In the draft regulatory measures notified to the Commission under Article 7 of the Framework Directive[13] until 2008, the Commission noted that, in some cases, NRAs were applying different types of price controls on different operators within similarly defined markets, and in some instances NRAs were setting termination rates based on different methodological approaches. Those approaches included top-down accounting data, bottom-up model, hybrid models[14]. The Commission found that the divergent regulatory approaches towards MTRs and FTRs were undermining the internal market and the competitiveness of the Union electronic communications sector.

High and strongly divergent termination rates (ranging in 2008 from 2 to 15 cent for MTRs) distorted competition between fixed and mobile operators, hindered market entry of smaller operators and innovation, and ultimately led to higher retail tariffs for businesses and households[15].

To remedy this situation, the Commission adopted in 2009 a **Recommendation on the regulatory treatment of fixed and mobile termination rates in the EU** (TRR)[16]. The TRR

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[10] Commission Recommendation of 11 February 2003 on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communication networks and services, (2003/311/EC), OJ L 114/45, 08.05.2003.

[11] Commission Recommendation of 17 December 2007 on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services, (2007/879/EC), OJ L 344/65, 28.12.2007.

[12] Commission Recommendation of 9 October 2014, on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services, (2014/710/EU), OJ L 295/79, 11.10.2014.

[13] Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services (Framework Directive), OJ L 108/33, 24.4.2002, as amended by Directive 2009/140/EC, OJ L 337/37, 18.12.2009, and Regulation (EC) No 544/2009, OJ L 167/12, 29.6.2009.

[14] Top-down models take operators' account data as the starting point to set regulated rates, whereas bottom-up models are built based on assumptions in the attempt to calculate the costs of a hypothetically efficient operator. In hybrid models, a bottom-up model is calibrated with data provided by network operators, or international benchmarking.

[15] Commission Staff Working Document (SWD), SEC(2009) 599 of 7 May 2009.

[16] Commission Recommendation 2009/396/EC of 7 May 2009 on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU (Termination Rates Recommendation), OJ L 124, 20.5.2009, p.67.

was issued in accordance with Article 19 of the Framework Directive, to ensure the harmonised application of the price-control obligation set in Article 13 of the Access Directive[17]. The TRR is a "soft" law instrument intended as guidance for NRAs on how to interpret and apply the legal provisions of the Directives of the regulatory framework for electronic communications. In particular, the TRR provides guidance on how to calculate the maximum wholesale prices on the termination markets, which are subject to periodic market reviews and notifications to the Commission in accordance with Articles 7 and 7a FD.

The aim of the TRR was to achieve lower and more consistent termination rates, by increasing consistency in the way NRAs set termination rates across the Union. The 2009 Recommendation provides a common methodology for the calculation of cost oriented termination rates which only allows the recovery of costs as would be incurred by an efficient operator (the so called 'pure Bottom-Up Long Run Incremental Costs' model, 'pure BU-LRIC'[18]). Given the ability and the incentives of terminating operators to raise prices significantly above cost, cost orientation was considered the most appropriate tool to address these concerns. The pure BU-LRIC cost methodology takes into account the costs of a hypothetically efficient operator and implies the exclusion of costs which would not be avoidable, if the provision of termination services were discontinued. Moreover, "pure" BU-LRIC methodology assumes the exclusion of joint and common costs for the purpose of calculation of efficient termination rates. The rationale of the pure BU-LRIC approach lays in the special character of termination services market, and its two-sided nature, whereby not all related termination costs must necessarily be recovered from the wholesale charge levied on the originating operator.[19]

This methodology has been recommended since it eventually leads to termination rates at a level which would prevail if the market were competitive. NRAs were recommended to implement the methodology by 31 December 2012, and to take utmost account of it. In particular, NRAs were recommended to use this methodology when imposing price control obligations on operators designated with significant market power. With respect to the nature of the TRR, the European Court of Justice (CJEU) held that "[i]*t is only where it appears to the NRA, in its assessment of a given situation, that the 'pure-BU-LRIC' model advocated by this recommendation is not appropriate to the circumstances that it may depart from it, giving reasons for its position*'[20].

An **Evaluation Report[21] on the Commission's 2009 Recommendation on Termination Rates** (the "Evaluation Report") was issued on 12 November 2018. The evaluation covered the implementation of the TRR across the Union since its adoption in 2009, examined

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[17] Directive 2002/19/EC of the European Parliament and of the Council of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities (Access Directive), OJ L 108, 24.04.2002, p. 7, as amended by Directive 2009/140/EC, OJ L 337, 18.12.2009, p. 37.

[18] The pure BU-LRIC approach provides that cost accounting for wholesale call termination services in fixed and mobile markets should only allow the recovery of the costs which would be avoided if a wholesale call termination service was no longer provided to third parties.

[19] See section 4.1 of Commission Staff Working Document SEC(2009)600.

[20] Judgment of the European Court of Justice of 15 September 2016, *KPN and others v ACM*, case C-28/15, paras 37 and 38, ECLI:EU:C:2016:692. The CJEU added that "*according to the Court's settled case-law, even if recommendations are not intended to produce binding effects, the national courts are bound to take them into consideration for the purpose of deciding disputes submitted to them, in particular where the recommendations cast light on the interpretation of national measures adopted in order to implement them or where they are designed to supplement binding EU provisions*".

[21] Commission Staff Working Document, Evaluation Report on the Commission's 2009 Recommendation on Termination Rates (Recommendation 2009/396/EC) {SWD(2018) 464 final}, https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=57662

developments in voice termination markets in the Union and their impact on wholesale and retail prices, assessed and quantified the impact on trade in the internal market[22]. The evaluation also looked into the question of whether there is a need for either further specification of the recommended methodology and parameters used to derive efficient costs for fixed and mobile network operators, and if so, to identify how this should be done, including the possibility to issue a decision on the basis of Article 19 (1) of the Framework Directive.

The Evaluation Report concludes, based on the cases notified in accordance with the Article 7 consultation procedure, that there was still a lack of consistency in the way NRAs were implementing the recommended model, in particular concerning the following aspects:

(i) a divergence in the way wholesale commercial costs are calculated for the purpose of setting FTRs;
(ii) the modelling, for the purpose of determining the minimum efficient scale, of an operator who is already efficient when it enters the market (instead of modelling an operator which would need several years to reach an efficient target scale);
(iii) the need to define the appropriate interconnection level to be modelled for the purpose of defining FTRs;
(iv) the need to model 4G technology to set MTRs;
(v) the need to properly define the termination increment; and
(vi) the fact that some NRAs are applying the average rate resulting from the model's output for the several years modelled, while others apply a different rate for each year as calculated by the model[23].

With regard to the relevance of the TRR, the Evaluation Report concluded that the principles of the TRR remained relevant. The main issue to be addressed was termination rates' divergence due to the non-implementation of the TRR in some Member States. In relation to the TRR's effectiveness, the Evaluation Report found that the TRR had contributed to achieving lower and more consistent termination rates across the Union. Low termination rates had helped develop new all-net and flat-rate offers[24] and the decline of offers differentiating between on-net and off-net calls, thereby allowing new entrants to expand and compete more effectively. Based on the fact that some NRAs had not yet implemented the TRR, the Evaluation Report concluded that the TRR has not fully achieved its objective, i.e. the consistent regulation of termination rates across the Union.

While greater consistency of regulatory approaches to termination rates has indeed been achieved in the Union, the issues identified continue to represent a barrier to the internal market for electronic communications[25].

Regarding the TRR's efficiency, the Evaluation Report suggested that the benefits of the TRR – for most operators, end-users and society as a whole – broadly outweigh the costs resulting from its implementation. The main negative effect observed by NRAs is indeed related to the asymmetric implementation of the TRR across the Union, which significantly distorts the

[22] The TRR states in its Recommendation no. 13 that "[t]his Recommendation will be reviewed not later than four years after the date of application".

[23] Ibid, page 12.

[24] "All-net" offers concerns calls originated and terminated in the same network. Offers can be "flat-rate" when the price of the offer does not depend on the volume of calls made by the customer.

[25] Ibid, page 28.

cross-border traffic and leads to financial imbalances across the Union, ultimately creating a barrier to the internal market.[26]

According to the Evaluation Report, the TRR has led to lower termination rates, thus boosting competition and increasing social welfare on the relevant termination markets. It has also favoured the harmonisation of national regulatory approaches to modelling termination costs and contributed to the development of the internal market for electronic communications. As the pre-2009 situation has shown, the same results would not have been achieved absent a coordinated action at Union level and thus shows the added value of action at Union level.

Finally, the Evaluation Report concluded that the TRR contributed to meeting the objectives of the regulatory framework and was coherent with the objectives pursued by the Roam-Like-at-Home ("RLAH") initiative. In this respect, it should be noted that as consistent MTRs across the Union were key for the elimination of roaming fees by 2017, the establishment of single Union-wide MTRs and FTRs will further support the continuation of the Roam-like-at-home regime.

However, the evaluation of the TRR, and the notifications received since 2009, have shown that the potential benefits of the TRR have not yet been fully achieved: despite the overall convergence towards cost-oriented termination rates, **divergences persist**, in particular between those Member States which have implemented the recommended model and those which have not. The reason for this is that, on the one hand, a small number of NRAs[27] have not followed the recommended approach. On the other hand, until recently, in some Member States, NRAs' decisions were annulled by national courts requesting the NRA to use a different cost methodology[28]. Due to deviations from the TRR in certain Member States, the relevant national operators continued to benefit from higher (above-cost) termination rates. Operators in non-implementing countries thus have an advantage as compared to operators in the implementing Member States. In these cases, NRAs put forward different reasons to explain the departure from of the TRR.

In its Recommendations[29] under Article 7 of the Framework Directive (see Annex I), fully supported by BEREC, the Commission, concluded that regulatory approaches other than pure

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[26] Ibid, page 34.

[27] According to BEREC Report of December 2019 (updated until July 2019), Member States that have not yet implemented pure BU-LRIC FTRs are Finland and Poland. NRAs in Germany, Estonia, Latvia use benchmarking of pure BU-LRIC FTRs. Finland is currently the only Member States to apply MTRs based on a different cost methodology (Fully Distributed Cost/ Fully Allocated Cost - FDC/FAC). Estonia, Lithuania, Latvia and Romania set MTRs based on a benchmarking approach.

[28] That is the case of the Netherlands, where in 2013, the decision of the Dutch NRA (ACM) imposing lower pure BU-LRIC rates for fixed and mobile termination markets, was challenged in the Dutch Trade and Industry Appeals Tribunal (the "Tribunal") which provisionally ruled that a BU-LRIC+ methodology should instead be used to determine FTRs and MTRs, given the characteristics of the Dutch market, and referred a question to the CJCE on the same topic. At the request of the Dutch College van Beroep voor het bedrifsleven (CBb), the CJEU clarified, in a judgment of 15 September 2016, that a national court, in its judicial review of a decision by a national regulator, must take into account the approach set under a Commission Recommendation and may only deviate from it in order to address identified, specific national circumstances (Case C-28/15 KPN BV v. Autoriteit Consument en Markt (ACM)). In 2011, the Tribunal partially annulled the Dutch regulator's decisions on fixed and mobile termination rates (cases NL/2010/1079 and NL/2010/1080) for the same reasons. At that time, OPTA (the name of the Dutch regulator at the time) had already proposed to set FTRs and MTRs on the basis of a pure BU-LRIC model. The Tribunal ordered OPTA to take a new decision regarding the price caps for fixed and mobile call termination rates and for direct interconnection rates on the basis of a BU-LRIC+ methodology.

[29] Cases DE/2013/1424, C(2013) 1266; DE/2014/1527, C(2013) 8634; DE/2014/1605, C(2014) 4291; and DE/2014/1666-1667, C(2015) 1924; Case FI/2015/1718, C(2015)5006. Please see Annex I for more examples.

BU-LRIC in the given termination markets were not appropriate to address the lack of effective competition within the meaning of Article 16(4) of the Framework Directive or justified in the light of the objectives laid down in Article 8 of the Framework Directive - particularly the objectives of promoting competition and user benefits pursuant to Article 8(2) of the Framework Directive.

Moreover, some divergence in the levels of termination rates was also observed among the Member States which have been applying the TRR[30]. To some extent, the difference may be explained by genuine and objective cost differences (e.g. network topology, population density) or by the time period for which the model calculation has been performed (subsequent updates of the same model calculations tend to yield lower costs). However, in some cases the differences result from different interpretation of the TRR and different approaches taken by NRAs within the pure BU-LRIC modelling, where the Recommendation is not sufficiently detailed. With regard to the latter, some examples include the determination of an efficient scale for a hypothetical operator and the treatment of wholesale commercial costs.[31]

1.3 Article 75 and Annex III of the Code

The Code requires the Commission to adopt a Delegated Regulation setting a **single maximum Union-wide voice call mobile termination rate and a single maximum Union-wide voice call fixed termination rate** by 31 December 2020.

Full harmonisation of FTRs and MTRs by means of a binding legal instrument introducing a single maximum termination rate for each mobile and fixed termination service which will be applicable to any provider of fixed and mobile termination services across the Union will enhance the development of the internal market and significantly reduce trade barriers among Member States. Moreover, given that individual NRAs will not be required anymore to build cost models to calculate efficient rates and regularly update them, the Delegated Regulation will significantly reduce the administrative burden for national regulators.

Article 75 of the Code provides that in setting the single maximum Union-wide voice termination rates the Commission must comply with the principles, criteria and parameters provided in Annex III.[32]

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[30] According to the BEREC Report on Termination Rates of July 2020, among those NRAs which implemented a pure BU-LRIC model for FTRs, the lowest rate is in Sweden (0.027 cent) and the highest in Netherland (0.139 cent); for MTRs, the lowest rate is in Cyprus (0.17 cent) and the highest in Slovenia (1.14 cent).

[31] Wholesale commercial costs are directly related to the provision of termination services to third parties; some NRAs wholly disregard such costs in their BU-LRIC models, while in some instances such costs constitute a significant proportion of the FTR modelled.

[32] The Code defines setting the single maximum Union-wide voice termination rates providing that the Commission must take into account the weighted average of efficient costs in fixed and mobile networks established in accordance with the principles provided in Annex III, applied across the Union and that the Union-wide voice termination rates in the first delegated act shall not be higher than the highest rate among the rates that were in force six months before the adoption of that delegated act in all Member States, after any necessary adjustment for exceptional national circumstances. Furthermore, the Commission must take into account the total number of end-users in each Member State, in order to ensure a proper weighting of the maximum termination rates, as well as national circumstances which result in significant differences between Member States when determining the maximum termination rates in the Union.

In addition, the Code provides that the Commission must take into account market information provided by BEREC, national regulatory authorities or, directly, by undertakings providing electronic communications networks and services' and 'consider the need to allow for a transitional period of no longer than 12 months

In sum, the Delegated Regulation should: (i) ensure compliance with the principles, criteria and parameters of Annex III, (ii) take into account the weighted average of efficient costs in fixed and mobile networks established in accordance with the principles provided in Annex III, (iii) take into account the total number of end-users in each Member State and any exceptional national circumstances, (iv) take into account information provided by NRAs, BEREC and undertakings and (v) where needed, provide for a transitional period of no longer than 12 months on the basis of rates previously imposed.

The Code also provides in Articles 75(2) and 75(3) that the Commission must **review the Delegated Regulation every five years** and in each such occasion shall consider whether the imposition of single maximum Union-wide voice termination rates remains necessary by applying the criteria listed in Article 67(1). Should the Commission thus decide not to impose single maximum Union-wide voice termination rates, the NRAs may conduct market analyses of voice call termination markets in accordance with Article 67, to assess whether the imposition of regulatory obligations is necessary at national level. If an NRA imposes, as a result of such analysis, cost-oriented termination rates in a relevant market, it shall follow the principles, criteria and parameters set out in Annex III and its draft measure shall be subject to the procedures referred to in Articles 23, 32 and 33.

Finally, Article 75 provides that NRAs must closely monitor, and ensure compliance with the application of the single maximum Union-wide voice termination rates as well as annually report to the Commission and to BEREC with regard to the application of this Article.

1.4 Procedure for the preparation of the Delegated Regulation

In order to prepare the Delegated Regulation the Commission services have relied on a broad range of inputs.

First, the Commission services have considered the draft measures notified under Article 7 of the Framework Directive by NRAs, and the prevailing FTRs and MTRs to date, as reported by bi-annual BEREC reports and in regulatory decisions.

Second, in order to estimate the costs of providing mobile and fixed voice call termination services, the Commission services took into account the two cost models commissioned to an external contractor, Axon Consulting. The cost models developed by Axon have been intensively consulted (with operators, NRAs, industry associations and BEREC) at a number of workshops. Stakeholders had the opportunity to give concrete feedback on both the fixed and the mobile cost model, in separate written consultation rounds. Also, a designated Steering Group – composed by experts on termination rates and costs models – was created, with the members appointed by BEREC who closely followed the development of each cost model.

Third, the Commission services launched an open public consultation on the scope of the Delegated Regulation and various implementation aspects, which ran from 20 July to 8 November 2019. The results of this consultation informed the relevant parts of this Staff Working Document and have been published.[33] The consultation included questions on the definition of termination services, the treatment of hybrid services, the scope of application, the possible use of a glide path and/or a transitional period and non-price related obligations. There were 68 respondents, including 32 companies or business organisations, 6 business

in order to allow adjustments in Member States where this is necessary on the basis of rates previously imposed.

[33] https://ec.europa.eu/digital-single-market/en/news/synopsis-report-open-consultation-setting-maximum-union-wide-voice-termination-rates.

associations, 19 Union citizens, 1 non- Union citizen, 9 public authorities (national regulatory authorities, Ministries and BEREC) and 1 non-governmental organisation. The replies came from 22 Union Member States.

Fourth, an Informal Expert Group on Union Voice Call Termination Rates, composed by representatives of NRAs with specific knowledge of the regulation of termination markets was established on 6 November 2019. It met on 10 February 2020 and 11 September 2020. Revised drafts of the Delegated Regulation and Staff Working Document were shared with the Expert Group on 11 November 2020. Several members provided comments by 18 November and the final drafts were shared with the Expert Group on 7 December 2020. The feedback from the Expert Group has been taken into account for the elaboration of the Delegated Regulation. With the Expert Group and its members, the Commission services discussed the draft Delegated Regulation and accompanying draft Staff Working Document, and especially the inclusion of associated facilities in the definition of termination services; the treatment of calls to non-geographic numbers other than mobile, where they raised a concern of over-regulation; the criteria for the inclusion of calls originated from outside the Union in the scope of the Delegated Regulation as well as the overall implementation of the single maximum Union-wide fixed and mobile voice termination rates. These exchanges provided to the Commission services an in-depth understanding of these services across the Union as well as of any Member State specific concern.

Finally, the Commission services also took into account BEREC's opinion[34] on the draft Delegated Regulation, issued on 15 October 2020 and the feedback received during the publication on the Commission's 'Have Your Say!' website, from 26 August to 22 September 2020. Feedback received by the Commission during this period included 49 submissions (29 from operators, 12 from industry associations, 2 from NRAs (UKE, NMHH), 1 from the German Federal Ministry for Economic Affairs and Energy and 5 from citizens (anonymous). A number of replies came from the same economic group (e.g. O2 CZ and O2 SK). All replies are public.

In its opinion, BEREC provides an overall support for the draft Delegated Regulation, including the proposed single maximum Union-wide fixed and mobile voice termination rates and how the efficiently estimated rates are reached through a glide path and transitional period respectively.

BEREC supports the general principle for defining mobile and fixed termination services along the numbers assigned to the provider of the called party. Further, BEREC also concurs with the approach for hybrid services and the possibility for NRAs to resolve disputes through dispute resolution procedures.

On associated facilities, BEREC points out that these are not included in the cost models developed by Axon Consulting. If any associated facility is included in the termination service definition, it needs to be ensured that its costs are covered by any safety margin so that it is ensured that all the underlying costs are remunerated. BEREC also underlines, that it is necessary for NRAs to remain able to impose remedies regarding associated facilities.

For non-geographic numbers other than mobile numbers, BEREC considers that the Delegated Regulation should not include a generic obligation to impose single maximum Union-wide fixed and mobile voice termination rates regarding termination to these numbers. According to BEREC, the Delegated Regulation should only include an obligation for

[34] BEREC Opinion on the Draft Delegated Regulation setting single maximum Union-wide voice fixed and mobile termination rates, 15 October 2020, https://berec.europa.eu/eng/document_register/subject_matter/berec/download/0/9504-berec-opinion-on-the-draft-delegated-act_0.pdf

services with “non-geographic numbers other than mobile numbers” when there exists a risk of excessive prices (i.e. termination monopoly situation) for wholesale termination services, and this happens under the CPP pricing interconnection regime. It should also be clarified that any regulation of origination is outside the scope of the Delegated Regulation.

For calls originated from third country-numbers, BEREC asks for clarification so that the Delegated Regulation defines the concept of "calls incoming and terminating in the Union" to calls originated from or terminated to numbers assigned nationally to numbering plans of operators active in the Union, irrespective of the country of origin or termination of the calls. BEREC supports the approach proposed in the draft, however pointing to potential implication issues.

As a final remark, BEREC highlights that non-price remedies are still necessary as it is essential for the NRAs to be able to easily and effectively tackle non-pricing issues.

Regarding the feedback received under “Have your say!”, large operators generally ask for higher rates and longer glide paths. Access seekers and MVNOs strongly support the proposed rates. Fixed operators, especially in Member States with high fixed termination rates, requested higher fixed termination rates and two Member States (where such rates remain very high) expressed concern as regards the impact of the lower rates on small fixed operators. The Hungarian NRA is very supportive of the draft Delegated Regulation, while the Polish NRA would favour higher termination rates and longer glide paths and a special transition period in particular for the fixed. The German Federal Ministry for Economic Affairs and Energy ask that the cost model be reviewed in light of the COVID-19 situation, a longer glide path and a 12 month transitional period (the longest possible).

2 Scope of the Delegated Regulation

2.1 Scope

This section describes the products and services that are to be considered as “termination services” and therefore in the scope of the Delegated Regulation.

The Delegated Regulation sets out the single maximum Union-wide mobile voice termination rate that applies to mobile termination services as well as the single maximum Union-wide fixed voice termination rate that applies to fixed termination services. It is therefore necessary to define the products and services that are to be considered as mobile and fixed termination services, respectively.

2.1.1 Definition of “voice termination service”

Current regulatory practice

Termination markets (both mobile and fixed) are included in the 2014 Relevant Markets Recommendation (‘RRM’).[35] The exact product scope of these markets was not defined in the RRM, however, the Explanatory Note accompanying the RRM provided some guidance on the definition of the relevant market in the case of fixed and mobile voice call termination. It

[35] Commission Recommendation 2014/710/EU of 9 October 2014 on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services (Recommendation on Relevant Markets), OJ L 295, 11.10.2014, p. 79.

specified inter alia that "[i]*n line with a technology-neutral approach, the wholesale fixed termination market comprises termination on PSTN and IP networks, and the wholesale mobile termination market comprises all mobile network topologies, 2G, 3G - UMTS, 4G - LTE and, if appropriate, any other networks operated in the Member States, such as CDMA networks. It includes call termination irrespective of where the call originates (national, international, fixed and mobile)*".

So far, in regulatory practice, the closest to a definition of wholesale voice termination services could be found in the 2009 TRR which states (Recital 7) that "*Wholesale voice call termination is the service required in order to terminate calls to called locations (in fixed networks) or subscribers (in mobile networks)".*

Regulatory practice shows that most NRAs define termination services markets by reference to the number called (rather than to the network used), including Austria, Belgium, Bulgaria, Croatia, Czechia, France, Greece, Ireland, Lithuania Malta, Portugal, Romania, Slovakia and Sweden[36]. Some NRAs (e.g. Luxembourg) currently define termination services by reference to both network and numbering aspects. Other NRAs (e.g. Germany) are currently considering moving from a network-based to a number-based market definition. Poland, which is currently using a network-based product market definition, supported a number-based approach for the purposes of the Delegated Regulation[37].

Feedback received

One of the questions asked in the public consultation was whether the definition included in the 2009 TRR, based on the network called, would still be valid, i.e. *Would you agree with the following definition of (wholesale) voice call termination service: "Wholesale voice call termination is the service required in order to terminate calls to called locations (in fixed networks) or subscribers (in mobile networks)"?*

Among the public authorities who replied to the public consultation, the views as regards such definition were mixed. While two NRAs and two Ministries agreed, four NRAs and BEREC did not agree and argued that the determinant characteristic of the termination service is the control of the number, hence the definition should reflect this. BEREC's suggested definition was: "*Wholesale fixed (mobile) voice call termination is the service required in order to terminate calls to end users' fixed (mobile) telephony numbers*". According to one NRA, the relevant criterion to be a termination service provider is the ability to control call termination and being able to set termination rates independently (partly due to the CPP principle explained above), and this should be reflected in the definition.

BEREC and NRAs, such as that of Romania, argued that the definition should be on the underlying numbering range involved. BEREC suggests *"[finding] a definition of wholesale voice call termination which is not technology based (fixed networks or mobile networks) but based on numbers (calls to numbers in EU MS national numbering plans which are either for fixed calls or for mobile calls). BEREC is of the opinion that the control of the number range is the key element to controlling the routing of the wholesale call termination service leg of the inbound call to the called party. Wholesale call termination cannot occur without, directly or indirectly, the involvement of the number range holder*." BEREC also asked the Commission to identify the different services considered to be part of the "termination service" and clarify to what extent the costs for transport from the interconnection point to the end-user, fixed costs for ancillary access services (e.g. fees for collocation, IC-port, IC-line, set-up) are included under the definition.

[36] In the United Kingdom, which has been a Member State of the Union until 31 January 2020, termination services are defined in relation to number ranges rather than in relation to the network used.

[37] See Poland's submission following the 1st Expert Group meeting held on 10 February 2020.

Most operators and business associations did not agree with the definition proposed in the public consultation and made some suggestions, such as that (i) regulated termination services should be based on the number; (ii) OTTs (thus not owning a network or interconnection points) should not benefit from regulated termination rates; Mobile Virtual Network Operators (MVNOs) not controlling access and supporting call termination costs do not qualify as voice termination service providers[38]; (iii) VoIP traffic should be included in the definition if numbering resources are used; or (iv) more flexibility for fixed wireless technologies is required, given that the link of "called networks" to "fixed networks" and "subscribers" to "mobile networks" is overly restrictive. In reply to the public consultation, most citizens agreed with the proposed definition.

Commission services' views

The Commission services agree with BEREC's opinion that the number is the element that shapes demand substitutability and therefore the termination monopoly: voice calls have to be terminated in the network of the operator controlling the access to the subscriber's (or location's) number, either directly or through indirect means, such as call forwarding. Likewise, no supply-side substitutability is possible because the called numbers are controlled by one terminating operator only. As some stakeholders point out, the number is relevant also at the wholesale level, given that call routing is performed on that basis. Therefore, the Commission services consider that the key element to determine the scope of the termination services is the number on which these calls are terminated. In line with BEREC's opinion[39], the Commission services define this number as a number in national numbering plans corresponding to E.164 country codes for geographic areas belonging to the territory of the Union (Union numbers). This holds both at the retail level (i.e. users calling a certain number) and at the wholesale level (i.e. operators route a call to the terminating network). Defining termination services based on the number called therefore reflects the fact that technical control of the number and the legal right to use it, and thus the ability to set the termination rate, is the main factor for the existence of the termination monopoly.

In line with most NRAs' decisions, the Commission services consider that there are no sufficiently close substitutes to broaden the market (and hence the termination service definition) beyond the focal (retail) service of calls to (fixed geographic or mobile) numbers, except for voice calls to certain numbering ranges that, as regulatory practice shows, are to be classified as fixed termination services (see Section 2.1.2 below for more details).

In the Commission services' view, this definition should also follow a technology-neutral approach. The proposed scope including all technologies used to provide (fixed geographic or mobile) termination services is technology neutral, both for termination services to fixed (including geographic and other non-geographic) and mobile numbers. It should include all possible technologies used to terminate calls to numbers, such as VoIP, 2G/3G/4G/5G, VoLTE, etc. This implies that the product market definition includes voice calls terminated to internet-based interpersonal communications services to the extent they use (fixed or mobile) publicly assigned numbering resources, namely, a number or numbers in national or international numbering plans. Conversely, the Commission services consider voice calls to number independent interpersonal communications services not to be sufficiently close substitutes from the end-user's perspective, although this situation may evolve in the future. Current national regulatory practice reflects this approach, as number independent

[38] By way of example, Orange proposed the following definition: "*Wholesale voice call termination is the service required in order to terminate voice calls to called locations or subscribers in Electronic Communications Networks from relevant interconnection points*".

[39] BEREC opinion, p.5.

interpersonal communications services are not included in the relevant termination markets and therefore remain unregulated.

In addition, for a given provider to qualify as a provider of termination services, the control of the numbering range and the ability to set termination rates independently needs to be established. As BEREC points out: '*[…] control of the number range and the ability to set the FTR and MTR is intrinsic to the cause of the termination monopoly*.' The Commission services agree that the relevant criterion to determine which providers are termination service providers is whether they are able to set termination rates independently for calls to publicly-assigned numbers, irrespective of the underlying network technology. Two additional criteria that should be used include: (i) if the provider has entered into a specific interconnection agreement for terminating calls on its network, and (ii) if the provider is in control of E.164[40] numbers corresponding to E.164 country codes for geographic areas of the territory of the Union (directly or indirectly).[41]

The Commission services consider that voice calls terminated by MVNOs[42] with control over charging for termination services are to be included in the definition, whereas voice call termination by MVNOs without control over charging for termination rates (since this is done by the Mobile Network Operator which terminates the voice calls for them) should not be included.

Following this approach (i.e. define the scope of the termination service based on the number called) could potentially lead to the following outcomes: (i) over-recovery of costs, linked to operators being entitled to apply the single maximum Union-wide mobile voice termination rate while bearing lower costs (such as those incurred for the provision of fixed termination services), or (ii) under-recovery of costs, if voice calls terminated on mobile networks are only entitled to charge the single maximum Union-wide fixed voice termination rate.

The Commission services do not consider these two potential outcomes to justify a different approach for the following reasons.

First, in view of the conditions associated with the use of numbering resources, such as the required mobility for the use of mobile numbering ranges (e.g. in Sweden), the cases leading to over-recovery of costs could only be marginal (using fixed termination for calls to a mobile number).

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[40] ITU-T Recommendation E.164 - the International public telecommunication numbering plan defines the number structure and functionality for five principal categories of numbers used for international public telecommunication namely: - International E.164 number for geographic areas, -International E.164 number for global services, - International E.164 number for Networks, -International E.164 number for Group of Countries, and - International number for Trials. In particular, in the context of this document, it is used to designate fixed geographic numbers.

[41] BEREC's response to question C.2 of the Public consultation: "*One way to determine this could be to establish: 1. Whether the provider has entered into a telephone-service specific interconnection agreement thus setting a termination rate for the receiving of calls to their network and, 2. Whether the provider is in control of E.164 numbers either directly by allocation or indirectly by transfer from other service providers. In that sense, these providers have de facto control over calls made to a specific number*."

[42] A MVNO does not have an access network and therefore rely on the antennas of the host MNO. Still, there is some flexibility to the term MVNO, depending on the level of MNO service integrated by the MVNO. Full MVNOs incorporate the management of telephone platforms by creating a core network and can manage sim cards, call flows and data flows. A full MVNO can also negotiate commercial agreements (like termination agreements) with other operators. Thus a full MVNO is able to charge for terminating calls and receives the termination fee for this service. Conversely, light MVNOs does not manage any levels of the network and therefore relies on the host MNO. The light MVNO is often termed "branded reseller", as the focus of the light MVNO is customer care, marketing etc. (and not the technical aspects of operating a network). Therefore, the light MVNOs do not have the ability to terminate calls and any fee for terminating calls to the customers of a light MVNO is paid to the host MNO.

Second, the use of fixed (geographic), fixed nomadic and emergency numbering ranges (non-geographic numbers) is usually associated to a fixed location, although voice call transfer mechanisms could be in place. Therefore, voice calls to fixed numbers would normally be terminated using a fixed network. The cases identified that use a mobile network to terminate fixed voice calls represent a very small part of termination markets overall.

Third, as set out in Section 2.1.3 below, in specific cases concerning hybrid services, the latter will be treated as either fixed or mobile termination services based on the number called and, for voice calls to numbering ranges for fixed nomadic and emergency services, they will be considered fixed termination services. Given that – as a consequence of being considered fixed termination services – the single maximum Union-wide fixed voice termination would apply (which is lower than the single maximum Union-wide mobile voice termination rate), no arbitrage issues would arise.

Fourth, the Commission services consider that classifying the termination service as a function of the number called is aligned with the underlying competitive analysis (demand substitutability) and retail price transparency, given that voice call plans typically charge based on the number called and therefore is less likely to lead to over or under-recovery of costs.

Finally, the Commission services consider that the Delegated Regulation should only apply to calls originated from and terminated to a Union number, that is to say a number included in national numbering plans under E.164 country codes for geographic areas belonging to the territory of the Union.

2.1.2 Interconnection ports

Interconnection ports are needed to hand over calls to other operators, connecting two networks. At the interconnection port, the call leaves network A and arrives at network B. Accordingly, interconnection ports are required for both origination and termination.

The usage of interconnection is incremental to the costs of providing termination services as increased capacity for interconnection is needed with increasing traffic, which is a decisive element for the determination of the wholesale voice termination rates under Annex III. The costs related to call origination are not incremental and should not be attributed to the costs of the termination rate.

The above are the technical elements setting interconnection ports apart from e.g. collocation and indeed most (if not all) other associated facilities, as these depend on the individual agreements and situation per operator in each Member State. As for example regarding colocation, this is used to provide also other services than termination services and is in the majority of cases also needed for origination services. For colocation, the cost for this service will typically not increase with the number of minutes/subscribers and according to the cost principles applied for defining the efficient maximum termination rates, colocation is not incremental to termination.

Current NRA regulation of interconnection ports focuses on legacy infrastructure for which the costs are indeed significant. If regulated rates for interconnection ports appear high, that is because those interconnection ports are based on legacy infrastructure, which results in higher costs. However, costs for providing interconnection ports based on modern IP-technology are much lower (as acknowledged also by BEREC) and likely to decrease. Given that Article 75 and Annex III of the Code refer to efficient costs and modern technologies, IP technology based interconnection is the technology this assessment relies on for reference.

More harmonisation would be needed in regard to the interconnection ports as the regulated rates differ substantially. There is evidence of anticompetitive pricing in regard to interconnection ports which has led some NRAs to regulate access and prices of interconnection ports. Interconnection ports are essential – for any operator and in any Member State – for the provision of voice termination services in order to allow operators to interconnect to the networks of other operators. For instance, operators in Italy are currently allowed to charge five-fold for interconnection ports compared to the Netherlands, despite the underlying technology supporting the interconnection being the same in the two Member States (both regulate the legacy interconnection ports, but with a substantially different maximum charge allowed). Therefore, at present a number of regulators rely on price-regulation for interconnection ports while some rely on "bill-and-keep".[43]

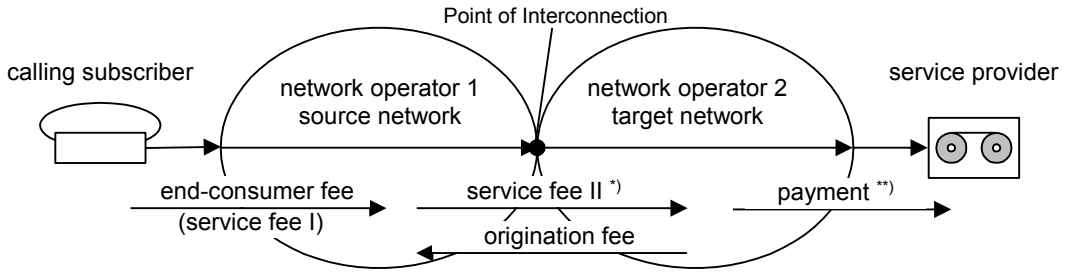
In its opinion[44], BEREC concludes that for any associated facility to be included in the definition of the termination service, it needs to be ensured that the margin between the termination rates and the underlying costs is sufficient to ensure full recovery for any additional element included. This is ensured in the case of interconnection ports as explained in point 3.2.4.

Therefore, the definition of termination services should include interconnection ports, since if excluded they would represent a hidden cost and prevent the effective application of Union-wide termination rates.

2.1.3 Numbering ranges other than fixed geographic and mobile numbers

Some numbering ranges, other than fixed geographic and mobile, follow the mechanism described in the flow chart below for call termination.

Figure 2: termination services for certain numbering ranges



*) Service fee II = end-consumer fee minus billing costs minus encashment risks.

**) The direction of the payment flow in this case corresponds to a value-added service number. This direction generally depends on the level of the end-consumer fee. For 0800-numbers, e.g. there is no payment, the service provider has to pay for the origination of the call.

Source: Rundfunk und Telekom Regulierungs-GmbH (RTR) (Austrian Regulatory Authority for Broadcasting and Telecommunications)

However, other numbering ranges, such as those for fixed nomadic[45] voice services, follow similar competitive dynamics to those of fixed geographic termination services.

In its opinion[46], BEREC classifies non-geographic numbering ranges other than mobile in the following categories:

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[43] Charges for interconnection ports are regulated separately in Italy, Austria, Bulgaria, Denmark, France, Germany, Norway, Netherlands and Sweden. In Spain, interconnection is based on bill and keep.

[44] BEREC opinion, p. 7.

[45] See footnote 41 below for the description of fixed nomadic numbers.

(i) fixed nomadic services;

(ii) free-phone services, where the charge for the call is paid by the called party and not the caller;

(iii) premium-rate services used for calls where certain services are provided, and for which the prices are higher than normal calls. Unlike a normal call, part of the total call charge is usually paid to the premium rate service provider, generally a distinct entity from the ECS provider, thus enabling businesses to be funded via the calls;

(iv) shared-cost services, which allow the caller to be charged for only part of the cost of the call, with the called party being charged for the remainder;

(v) emergency services (e.g. 112);

(vi) social value services, such as the EEA harmonised number range 116 XXX;

(vii) other special phone services, charged more than a regular fixed call, like directory services, (e.g. 11 8 XY in some MS used for directory services), and

(viii) machine to machine (M2M) services, in Member States where non-geographic numbers other than mobile are used for M2M voice communications.

According to BEREC, "value-added services" (VAS) comprise all these ranges, except for (i), (v) and (viii).

Current regulatory practice

Most NRAs exclude numbering ranges for VAS from regulated termination rates, based on different competitive constrains and other factors. The 2014 RRM Explanatory Note also argued in favour of excluding them: "*[w]hile calls to mobile numbers and to non-geographic numbers providing public services can be considered as part of the relevant mobile or fixed termination market on the grounds of similar competitive conditions to those when a call is terminated on a geographic number, the mechanics of termination of calls to non-geographic numbers for the provision of value added services would rather argue in favour of excluding this type of termination from the relevant market. Most NRAs exclude it, on the basis of differences in terms of functionalities, network coverage requirements, costs for the provision of the service and competitive conditions which are not prone to change in a forward looking perspective."*

Most NRAs however include calls to fixed nomadic and emergency numbers in the regulated termination rates under fixed termination services, as they follow similar competition dynamics to those of calls to geographic numbers.

Commission services' views

The Union-wide termination rates should apply to mobile and fixed termination services respectively. Only those services which represent the common denominator in Member States, which are regulated at present as fixed or mobile termination services (based on current NRA practice) should be included in the scope of the Delegated Regulation as they can be classified as either fixed or mobile.

The Commission services consider that the termination of calls to numbering ranges for **VAS** should be excluded from the scope of the Delegated Regulation. Taking into account in particular BEREC opinion[47] the following reasons are relevant:

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[46] BEREC opinion, p. 9.

[47] BEREC opinion, pp. 10-14.

First, the competition dynamics for terminating voice calls in numbering ranges for VAS differ from "traditional" CPP-based termination. For example, free-cost numbers typically follow the receiving party pays ("RPP") and not the CPP principle. The call recipient (the provider of the free-cost services) would therefore take the termination rate billed by its host operator into account when choosing its host operator, as opposed to a call recipient under "traditional" CPP. As regards revenue-sharing arrangements (e.g. for premium rate numbers), which still follow the CPP principle, the service provider enters into an agreement with the host operator and would have an incentive to switch if termination rates are increased substantially. At the same time, the termination rates negotiation would be only one element of the overall revenue sharing negotiation. In most of these cases the service provider is not indifferent to the termination charges paid by the calling party (unlike in the case of "traditional" termination services) as these charges may affect their competitive advantage as regards the service they provide (e.g. premium-rate services).[48]

Second, this would allow to avoid/minimise potential risks of over-regulation, and therefore to focus regulation where it is effectively needed, in line with the principle that remedies should be justified, objective and proportionate. As stated by recital 196 of the Code, the Commission should establish, by means of a delegated act, single maximum voice termination rates in order to reduce the regulatory burden in addressing the competition problems relating to wholesale voice call termination. Therefore, the Commission services consider that extending its intervention to segments of the markets that do not currently present competition problems in most of the Member States would not be justified.

Finally, if NRAs find that competition problems still remain for calls termination to numbering ranges for VAS (which only happens today in very few Member States), they may still decide to impose price obligations on service providers for these services, as they fall outside the scope of Article 75 EECC, as they would not be fixed or mobile voice termination services to which the Delegated Regulation applies.

In relation to calls to numbers for **fixed nomadic services and to access emergency services**, the Commission services consider that termination for calls to these numbering ranges should fall within the scope of the Delegated Regulation and be treated as fixed termination services. This is in line with BEREC opinion[49] and is based on the following reasons.

First, termination services for calls to numbers for fixed nomadic services and access to emergency services are currently regulated by a majority of NRAs as fixed termination rates because, as BEREC suggests in its opinion[50], they are likely to follow similar competition dynamics of "genuine" termination services. Therefore, their classification as fixed termination services is in line with current NRA practice.

Second, the majority of these services, if not all, are provided over a fixed infrastructure, rather than a mobile one, which would be consistent with their treatment as fixed termination services, since the relevant costs would match those of a fixed network. Some of these numbering ranges, notably fixed nomadic services, are also typically billed as fixed calls in retail calling plans for end-users. Therefore, there would be no or little risk of under-remuneration of termination into these numbering ranges as they are largely provided over a fixed infrastructure. This reasoning based on the cost is relevant since these numbering ranges are not geographic or mobile numbers, and hence cannot automatically be assigned to one category.

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[48] See for example, ComReg's decision 19/47 of 23 May 2019, page 226, https://www.comreg.ie/publication-download/market-review-fixed-voice-call-termination-and-mobile-voice-call-termination

[49] BEREC opinion, page 15.

[50] BEREC opinion, page 14.

Finally, including them in the scope of the Delegated Regulation would reduce regulatory burden and increase legal certainty for market players, as NRAs would not need to take a specific decision for including them under regulated termination rates. It would be however necessary that NRAs, either at the request of operators, as a result of dispute resolution procedure or at their own initiative, specify which numbering ranges correspond to fixed nomadic services and emergency services in each Member State.

In relation to calls to **M2M-specific numbering ranges**[51], the Commission services consider that they should be excluded from the scope of the Delegated Regulation, as the services provided over M2M-specific numbering ranges, are not used for interpersonal communications – a condition that should be met to fall within the scope of this Regulation- but for communications between machines.

Conclusion

Termination services for calls to numbers for VAS, such as those used for premium-rate services, toll-free services and shared-cost services should be left out of the scope of the Delegated Regulation. Termination services for calls to numbers for fixed nomadic and emergency services should fall within the scope of the Delegated Regulation and be treated like fixed termination services. NRAs would, as part of their implementation tasks of the Delegated Regulation, specify which numbering ranges correspond to fixed nomadic and emergency service in each Member State, in principle at the request of operators or as a result of dispute resolution procedures. Termination services for calls to numbers to M2M-specific numbering ranges should be left out of the scope of the Delegated given that, in the vast majority of cases, they are not used for the provision of interpersonal communications services.

2.1.4 Hybrid services

Some voice call services that cannot be classified as purely mobile or purely fixed have appeared on the market. An example is the service provided by Telco Village in Germany. Telco Village provides voice call termination to call collection services (or 'Anrufsammeldienste') on a mobile number allocated to TelcoVillage GmbH. For this purpose, however, Telco Village does not use mobile network elements but only fixed network elements, which it uses to forward calls to the mobile numbers it controls.

Other operators in different countries provide 'home zone' services which allow a mobile subscriber to receive calls using a fixed number and the caller be charged the rate for fixed calls, provided the user is within a certain distance from a given location (typically the caller's home).[52]

Other examples of hybrid services are:[53] Unified Communication-IP Centrex in Italy (call services on fixed number over mobile devices, which are provided using call forwarding solutions or over-the-top applications, through VoIP protocols over data network); fixed call service (also in Italy) provided through a wireless network especially designed for providing

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[51] M2M-specific numbering ranges currently exist only in a few Member States (e.g. Spain, Netherlands).

[52] The Explanatory Note to the RRM (2014) notes that: "*A home-zone product consists of a mobile voice service provided at a fixed location. Customers using this service receive a telephone number from the fixed numbering plan, containing the area code of the location where the service is provided. This can be realised both by fixed networks and mobile networks, but this type of product does not allow clients to switch between different cells of those networks. Thus, when end customers walk outside the range of a base station (usually hundreds of meters), their call will be disconnected.*"

[53] See replies to the public consultation on the scope of the Delegated Regulation, question E.4.

fixed voice and data services, provided on a modem installed in the premises of the end-users and using VoIP technology (Linkem, Eolo, Tiscali, Go Internet, Mandarin are the companies providing such type services); Fix GSM (Croatia) is a service where GSM mobile technology is used for the provision of call services in fixed location (used only as a substitute for fixed line connection in areas with no fixed line coverage or in areas); Home Zone services in Portugal or Germany (fixed call service, provided at a fixed location, provided with assigned fixed numbering from the national numbering plan, enabled by mobile network technology).

Current regulatory practice

In most cases, such hybrid services are currently treated as fixed termination services, given that they use fixed geographic numbers (see replies to the Public Consultation below).

Feedback received

The public consultation asked three questions regarding hybrid services: (i) "*Are you aware of these operators in your country?*", (ii) "*If yes, how are they regulated as regards termination rates?*" and (iii) "*How should these hybrid services in your view be classified under the delegated act?*"[54]

The large majority of business associations, operators and public authorities were aware of hybrid services being provided in their countries. These services were only known to around half of the Union citizens who replied to the public consultation.

Regarding existing regulation of hybrid services, the responses were mixed. About one third of operators replied that they are regulated as fixed termination services, another third replied that they are regulated in a different way, while the rest did not provide a response. The majority of public authorities replied that these services are regulated in a different way (neither as fixed nor as mobile services). In most of the latter replies, these authorities explain that they regulate them based on the number called.

In relation to the question as to how hybrid services should be regulated, the views were again mixed. Only a small minority of stakeholders took the view that these services should be regulated as mobile services. The majority of business associations and public authorities submitted that these services should be regulated in a different way (not as fixed, mobile, as a function of the underlying network or the underlying pricing structure). Among operators, around 20% were of the view that they should be regulated as fixed services (which is consistent with a number-based approach as those services typically use fixed numbers), another 20% considered that they should be regulated as a function of the underlying network and 28% supported regulation in a different way (mentioning options such as regulation based on the number called or based on the recovery of costs, i.e. network-based). Almost half of the Union citizens who replied to the consultation also supported this approach.

BEREC submitted that NRAs take these services into account in their market analysis and they are typically regulated based on the numbering ranges these services use. BEREC is of the opinion that, under the Delegated Regulation, hybrid services should be classified as purely mobile or fixed services depending on the numbering range to which the call is terminated. BEREC added that it "[…] *finds that the call termination service for calls to fixed numbers delivered via mobile technology is in the same relevant market as voice call termination for calls to fixed numbers delivered over landline voice technology. This reflects also the perspective of the end-users (fixed number are associated with fixed services and*

[54] Questions E3/E4: "*Please consider hybrid voice operators as those providing voice services that are either not purely fixed or not purely mobile services (for example a voice service provided over a mobile device and network but using a fixed number). Are you aware of these operators in your country?*", questions E5/E6: "*If yes, how are they regulated as regards termination rates?*" and questions E7/E8: "*How should these hybrid services in your view be classified under the delegated act?*"

mobile numbers with mobile services) and is consistent with the retail charging regime, where retail call charging hinges on the kind of the called user number (fixed or mobile), i.e. in the CPNP[55] regime the calling party knows whether the call is delivered to a fixed or mobile destination on the basis of the called number". Some operators and associations highlighted that the overarching principle should be the recovery of costs. ECTA called for a case-by-case assessment in view of their competitive impact, also based on the service functionality.

Commission services' views

The Commission services consider that the relevant criterion to decide whether hybrid services should be treated as fixed or mobile termination services is the number called as this reflects the substitutability of the service from the end-user's perspective. This is in line with the proposed definition of wholesale termination services.

This approach provides transparency and legal certainty for operators given that operators would expect that a FTR is applied to a retail fixed voice service and a MTR to a retail mobile service. As a result from this approach, termination of calls to fixed numbers provided through mobile technology will be treated like fixed termination services. This is in line with current NRA practice and is compatible with the logic of market analysis where demand-substitutability needs to be assessed[56] and is supported by BEREC.[57] The 2014 RRM also follows this approach.[58]

In the event that a given service provider provides calls to both fixed and mobile numbers, the treatment of such service as a fixed or mobile will be undertaken on a call-by-call basis (whereby some calls are terminated on a fixed number while others are terminated on a mobile number). However, given the potential variety of such services and the likely rapid technology evolution,[59] NRAs will be able to eventually decide which regulatory treatment (fixed or mobile termination) should be applied through dispute resolution procedures, in

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[55] Calling Party Network Pays, i.e. it is the network provider of the calling party who pays a termination charge to the network provider of the called party.

[56] See for example (IE/2019/2150): *"ComReg considers that termination services provided to geographic numbers in the fixed networks numbering range, using mobile technology should also be included in the product market definition, as these services share similar functionality characteristics (limited mobility) and similar pricing structures as voice call services delivered via narrowband technology to end users at a fixed location".*

[57] BEREC's reply to question E.8 of the public consultation: "*This reflects also the perspective of the end-users (fixed number are associated with fixed services and mobile numbers with mobile services) and is consistent with the retail charging regime, where retail call charging hinges on the kind of the called user number (fixed or mobile), i.e. in the CPNP regime the calling party knows whether the call is delivered to a fixed or mobile destination on the basis of the called number. The classification of the given service should therefore be a function of the phone number used by the aforementioned service: generally, mobile phone numbers should be regulated by MTR, fixed phone numbers by FTR. This is a simple and comprehensive approach, which is in line with current practice*."

[58] 2014 RRM Explanatory Note: "*This can be assessed, for example, by analysing whether retail/wholesale prices of the home-zone product are similar to the retail/wholesale charges of a fixed or of a mobile operator, etc. For instance, regardless of the use of a different technology, fixed/mobile convergent services seem to have economic and functional characteristics similar to the traditional fixed telephony services. Thus, in the context of integrated fixed/mobile offers (where calls would be terminated to geographic numbers at fixed locations), a call may be technically terminated on a mobile network but charged at the level of a fixed termination rate."*

[59] See public consultation reply from an operator (question E.8): "*Differences between fixed and mobile telephony will be increasingly blurred due to the technological evolution in place, leading to the convergence of both services. At present, the type of services offered could be taken as reference: if it foresees the mobility of the end-users, it should be considered as mobile, if it is linked to a fixed location, it should be considered as fixed, irrespectively of the access technology used."*

cases they do not clearly fall under the scenarios described in this Section and therefore may give rise to a dispute.

Some stakeholders have submitted that the termination rate charged should in all circumstances reflect the underlying cost (hence suggesting to apply the termination as a function of the network).[60] The Commission services, in line with the approach taken in Section 2.1.1, do not consider it necessary to follow this approach for the following reasons.

First, conditions attached to numbering in Member States typically ensure that fixed numbers are used for services that are fixed and mobile numbers are used for services that are mobile. In particular, mobile numbers are usually only used for mobile services (thus avoiding over-recovery of costs).

Second, applying the fixed or mobile termination rate depending on the functionality of the service (i.e. in line with the number used, whether fixed or mobile) is in line with the incremental, long-run efficient cost-based approach, in that the single maximum Union-wide fixed voice termination rate is applicable to functional equivalents of calls to fixed numbers and the single maximum Union-wide mobile voice termination rate to calls to mobile numbers. In line with cost model principles, fixed (or mobile) technology would in general be the most efficient way to provide such services, and the single maximum Union-wide voice termination rate applied would reflect that cost. In other words, it would be the operator's choice to use a less efficient technology (mobile) to provide fixed services.

If, in some cases, an operator decides to use mobile technology for the provision of fixed services, it cannot be argued that the application of the single maximum Union-wide fixed voice termination rate would amount to financial losses for that operator, given that the mobile infrastructure is likely to be already in place and such provision would therefore enable considerable cost savings for those operators (those of deploying a fixed network).

Third, hybrid services are relatively marginal and would therefore not have a large impact on the financial situation of operators.

Fourth, a number-based approach is more transparent, in that calling operators and end-users will know that a single maximum Union-wide fixed voice termination rate will be applicable for calls considered as "fixed" in retail calling plans. Conversely, a network-based approach would lack such transparency.

Conclusion

Termination for hybrid services should be treated as either fixed or mobile termination services depending on the number called, in line with the proposed definition of termination services. Moreover, dispute resolution procedures may be used in case of complaints regarding the appropriate classification of certain termination services. BEREC concurs with this conclusion.[61]

2.1.5 Conclusion on the definition

For the purposes of the Delegated Regulation, termination services are defined as follows:[62]

> "*Mobile voice termination service means the wholesale service required to terminate calls to mobile numbers that are publicly assigned numbering resources, namely*

[60] See replies to the public consultation on the scope of the Delegated Regulation, questions E.7 and E.8.

[61] BEREC opinion, p. 3 and 5.

[62] Competent authority is to be understood pursuant to the Code.

numbers from national numbering plans, provided by operators with the ability to control termination and set the termination rates for calls to such numbers, where there is interconnection with at least one network, irrespective of the technology used, including interconnection ports";

"Fixed voice termination service means the wholesale service required to terminate calls to geographic numbers and non-geographic numbers used for fixed nomadic services and emergency services, that are publicly assigned numbering resources, namely numbers from national numbering plans, provided by operators with the ability to control termination and set the termination rates for calls to such numbers, where there is interconnection with at least one network, irrespective of the technology used, including interconnection ports".

As it results from the above definitions, the main criterion that the Delegated Regulation uses for the definition of termination services is the number, i.e. whether the call is delivered to a mobile number or to a fixed number (including numbers for fixed nomadic and emergency services). The Commission services consider that the number is the element that shapes demand and supply substitutability both at the retail and the wholesale levels.

This definition includes all technologies used to terminate calls to that mobile or fixed geographic number by the termination provider (e.g. on a 2G, 3G, 4G or 5G network and/or via WiFi, any type of fixed network) and regardless of how the call may be originated.

Any termination service, fixed or mobile, entails the terminating operator's network interconnecting with at least one other network other than the terminating operator's network. Voice termination providers should therefore have the necessary technical capabilities to be able to route the call to the call recipient, including the control of the number (and be responsible for these capabilities).

The termination service, as defined by the Delegated Regulation, should also include any capacity requirements for interconnection ports, setup fee to provide interconnection. This applies regardless of the actual underlying technology implemented by the operator(s) to provide the interconnection. As such, any provider of termination services may not levy any other cost than the relevant single maximum Union-wide voice termination rate for the full service of terminating a call to a number on its network.

2.2 Treatment of calls originated from third country-numbers and terminated to Union-numbers

The foreseen regulated termination rates apply to voice calls originated from and terminated to Union-numbers[63]. However, a relevant question to consider is whether they should also apply to calls originated from third-country-numbers and terminated to Union-numbers, and if yes, under which circumstances.

Current regulatory practice

Currently, in a large majority of Member States, NRAs do not regulate voice termination for calls terminated to Union-numbers that originated from third country-numbers and thus operators are able to set termination charges freely for such calls. Some NRAs set certain

[63] In accordance with the proposed definition of termination services, which is based on the number, it results that, for instance, the roaming calls made by a Belgian number to a Dutch number when the Belgian end-user is travelling in Switzerland will fall within the scope of the Regulation. These calls are originated from a Union-number (the number of the Belgian end-user) and terminated to a Union-number also (the Dutch number).

limits to the freedom of operators to set termination charges in such cases, for instance by mandating that operators can only charge termination rates equivalent to those charged by their third country counterparts (and not higher). As BEREC notes in its response to the public consultation, *'[i]n 2016 incoming calls originating from numbers pertaining to the national numbering plan of countries from outside the EEA were treated differently by NRAs, such that either these were not regulated at all or operators could set symmetric or asymmetric termination rates*'.[64] Taking into account the latest decisions issued by NRAs, the situation is the following as of June 2020:

- For FTR: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Greece, Hungary, Italy, Latvia, Lithuania, Luxembourg, Malta, Poland, Slovenia, Slovakia and Sweden do not regulate fixed voice termination originated from third country-numbers; France, Germany, Ireland, Netherlands, Portugal, Romania and Spain allow operators to freely negotiate termination rates, with certain conditions, typically that the rates charged should not be higher than those charged by their third country counterparts[65].
- For MTR: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Greece, Hungary, Italy, Latvia, Lithuania, Luxembourg, Malta, Poland, Slovenia and Slovakia and Sweden, do not apply any price regulation to mobile calls originated from third country-numbers; France, Germany, Ireland, Netherlands, Portugal, Romania and Spain allow operators to set termination rates, with certain conditions, typically that the rates are not higher than those charged by their third country counterparts[66].

Feedback received

The public consultation asked the following question: "*If you are an operator that is active outside the EEA, are you of the view that operators outside the EEA should apply termination rates equivalent to the single maximum Union-wide voice termination rates outside the EEA, if they were to benefit from the single maximum Union-wide voice termination rates when terminating calls from non-EEA countries into the EEA?*".[67] Although this question was mainly addressed to non-EEA operators, EEA stakeholders also replied.

The public consultation provided broad support for the exclusion of calls originated outside the EEA from the scope of the Delegated Regulation, sustaining the view that EEA operators would be in a weaker bargaining position vis-à-vis non-EEA providers for the negotiation of termination rates.

The large majority of respondents who provided a view on this issue considered that the single maximum Union-wide voice termination rates should not apply to calls originating outside the EEA for the following main reasons: (i) it would limit the ability of EEA operators

[64] BEREC's response to the public consultation, question G.2.

[65] For a recent example, see cases IE/2019/2150-2151, where ComReg proposed, with regard to both the fixed and mobile termination markets, allowing designated SMP operators to differentiate between EEA and non-EEA originated calls in those instances where the termination rates of non-EEA operators are above the highest EEA pure BU-LRIC termination rate.

[66] For instance, in case DE/2019/2194 BNetzA notified a draft measure proposing to remove the access and price control obligations previously imposed on the three MNOs for calls originating from outside the EEA, subject to the condition that the MTR applied by the relevant German MNO does not exceed the MTR charged for a comparable termination service in the relevant non-EEA country. See also case RO/2019/2207, in which ANCOM envisaged allowing operators not to apply the regulated MTR to non-EEA originated calls in certain specific situations and subject to the condition that MTRs do not exceed the level charged by the relevant non-EEA counterparts.

[67] Public consultation responses, questions G.1 and G.2.

to respond to excessively high termination rates from operators outside the EEA, thus putting EEA operators at a competitive or financial disadvantage, and (ii) there would be a risk of a potential distortion of competition between EEA and non-operators EEA that increases costs for domestic operators and, by extension, for domestic end-users.

The large majority of respondents who provided a view considered that operators outside the EEA should charge termination rates equivalent to the single maximum Union-wide voice termination rates for calls originated from the EEA, if they were to benefit from the single maximum Union-wide voice termination rates when terminating calls from non-EEA countries into the EEA.

Most public authorities, BEREC, operators and associations agree that the single maximum Union-wide voice termination rates should apply either (i) only to calls originated within the EEA or (ii) to both calls originated within the EEA and calls originated outside the EEA subject to certain reciprocity requirements[68]. BEREC highlights that these two approaches are in line with the current practice of NRAs.

Two non-EEA companies (the only non-EEA companies which responded to the public consultation) raised concerns that such complete non-application of the Union regulated rates to calls originated in third countries would not comply with international trade law. The Romanian NRA (ANCOM) also raised this concern and suggested that, should termination rates set by third countries not be cost-oriented, the Union should take action at WTO level or bilaterally. Further, ANCOM took the view that single maximum Union-wide voice termination rates shall apply at least for the calls originated from states which agreed with the Reference Paper.[69]

Public authorities and operators agreed that applying the single maximum Union-wide voice termination rates to calls originating outside the EEA would put European operators in a weak bargaining position vis-à-vis their non-EEA counterparts.

Several operators and associations (Orange, Vodafone, TIM, Hutchison, Eir, MVNO Europe and ECTA) advocated the application of the single maximum Union-wide voice termination rate to calls from outside the EEA only in the case that non-EEA operators charge the same termination rate as the single maximum Union-wide voice termination rate. Some of them were in favour of such mechanism, whereas other opposed. Citizens provided replies supporting both views.

In the 'Have Your Say!' feedback, most respondents argued that the Delegated Regulation should generally not apply to calls originated outside the Union.

In its opinion, BEREC appreciates the approach presented in the draft Delegated Regulation and the efforts made to find a WTO-compliant regulation of termination rates. Further, BEREC finds it critical that any criteria to be used in this regard do not unreasonably restrict the ability of European operators to respond to high termination rates in countries outside the Union.

Commission services' views

With the aim of ensuring the application of termination rates in an open, transparent and non-discriminatory way, and taking account the proportionality principle, the regulated

[68] Finnish Ministry, the Netherlands Ministry, the Polish NRA (UKE).

[69] The GATS Reference Paper on telecommunications provides that interconnection with a major supplier should be provided at cost-oriented rates, https://www.wto.org/english/tratop_e/serv_e/telecom_e/tel23_e.htm.

termination rates should apply to calls originated from third countries' numbers and terminated to a Union-number in two cases:

First, they should apply to calls originated from third countries' numbers and terminated to a Union-number where the termination rates (applied or proposed to be applied) for calls originated from a Union-number and terminated in those third countries' numbers are at a level equal or lower than the level of the maximum voice termination rate set by the Delegated Regulation for each year in each Member State. The relevant maximum mobile termination rates that will trigger this mechanism in 2021, 2022 and 2023 will be those set out by paragraphs 2 to 5 of Article 4 of the Regulation. The relevant maximum fixed termination rates that will trigger this mechanism in 2021 will be those set out by Article 5(2) of the Delegated Regulation.[70]

Providers of termination services in the Union should apply the maximum regulated termination rates automatically to providers of termination services in third-countries, on the basis of rates included or proposed to be included in the agreements with such providers. Taking into account BEREC's opinion[71], given that Union providers of voice termination services may not always be in the position to know the level of the termination rate applied by third country operators[72], it will be normally for the latter to provide verifiable information proving the level of the termination rate offered. Unless Union providers of termination services have the necessary information referred to before, they are not under the obligation to apply the single maximum Union-wide termination rates set out in the Delegated Regulation. This information requirement should not, however, be abused for the purpose of excluding the third country operator from the application of those rates.

Second, the regulated termination rates would apply to calls originated from third country-numbers and terminated to Union-numbers, in cases where it results, on the basis of information received by the Commission from such third-countries, that the regulation of termination rates for calls originated from Union-numbers and terminated to such third countries' numbers is equivalent to the principles set out in Article 75 and Annex III of the Code. The third-countries which make such a request and which meet such requirements as assessed by the Commission, should be included in a list in an Annex to the Delegated Regulation. The list should be reviewed in order to remove third-countries that no longer apply such regulation or add third countries that apply and qualify based on the Commission's assessment. Therefore, this second criterion for including calls originated from third country-numbers in the scope of the Delegated Regulation would only be used if termination rates in the third country are above the Union-wide termination rates, as the lower or equal rates will be addressed under the first criterion.

Limiting the application of the maximum Union-wide termination rates to such cases is necessary to ensure the conditions for the good functioning of the internal market and the achievement of the objectives of the Delegated Regulation.

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[70] For example, an operator in Ireland may charge as a maximum 0.0385 eurocent/min in 2021, 0.43 eurocent/min in 2022, 0.4 eurocent/min in 2023 and 0.2 eurocent/min as of 2024 onwards to terminate a mobile call originated from a third country-number if the mobile termination rate charged by that third country operator to terminate a mobile call originated from a Union-number is equal or lower to – respectively- 0.0385 eurocent/min in 2021, 0.43 eurocent/min in 2022, 0.4 eurocent/min in 2023 and 0.2 eurocent/min as of 2024 onwards.

[71] BEREC opinion, p. 24.

[72] Interconnection agreements with third country operators are often handled via transit operators. In those cases, the termination rate comprises only a part of the total cost charged by the transit operator for the conveyance of the call. Therefore, in such case, operators of the Union will not have full information of the actual termination rate charged by a (specific) operator in a third country.

An indispensable objective of the Delegated Regulation is to harmonise the maximum rates for fixed and for mobile termination services across the Union. This aims to reduce the regulatory burden on NRAs and operators and prevent competition problems in wholesale voice call termination markets. It also removes the fundamental competitive distortions arising from significant divergences in the treatment of fixed and mobile termination rates. As explained in Section 1, the primary objective of the Delegated Regulation is therefore to foster market integration by harmonising termination rates across the Union, going beyond setting a common methodology for regulated termination rates which has failed so far to ensure full consistency of rates, as some NRAs applied different approaches within the recommended cost methodology[73]. These single maximum Union-wide rates will eliminate net payments between operators in different Member States that are due to different levels of termination rates rather than to different call volumes.

Termination rates can have important strategic and competitive implications and thus having different levels of termination rates within the Union is likely to favour certain operators and harm others. Examples of such distortions are, as highlighted by the Evaluation Report on 2009 TRR, financial transfers between fixed and mobile operators, or between small and large operators. Member States with higher termination rates would likely have higher retail prices, causing lower usage rates and decreasing consumer welfare.

The positive effects of harmonised termination rates are set out in the Commission's evaluation report of the 2009 TRR. The evaluation report found that the Recommendation contributed to achieving lower and more consistent termination rates across the Union and increased the level playing field in the termination markets (by addressing the issue of cross-subsidisation between fixed and mobile operators on one hand, and small and larger operators on the other hand). The report also found that lower wholesale termination rates are likely to have triggered a decrease of retail prices, an increase in traffic volumes and the launch of new retail offers. These positive effects will be further increased (to the maximum possible) through the Delegated Regulation by setting a single rate across the Union due to its even stronger harmonisation impact, which cannot be ensured under the Recommendation.

However, the application of the single rates to calls originated from third country-numbers where operators charge termination rates higher than the maximum termination rates set out in the Delegated Regulation or third countries whose rates do not follow the cost principles set out in the Code, would risk undermining the objectives pursued, including its internal market objectives.

First, including calls originated from third country-numbers - where operators charge high termination rates - and terminated to Union numbers, would deprive Union operators of the possibility to negotiate termination rates with non-Union operators on an equal footing, which they can currently do. In fact, if they were bound to apply the single maximum Union-wide voice termination rates to calls originated from Union-numbers even where there is no guarantee that the termination rates charged by those third country operators are set or regulated in an appropriate manner, Union operators would be bound to accept any rate charged by third country operators, while being bound to charge to them very low prices (the single maximum Union-wide voice termination rates).[74] The result would be that Union operators would likely face much higher termination rates for calls terminated outside the

[73] See section 1.2.

[74] The cost-orientation criteria for cost allocation used in the EU are among the strictest, i.e. other countries may still follow cost-orientation to some extent but obtain a much higher cost than the single maximum Union-wide termination rates-. Examples of countries with current termination rates (at least for international calls) much higher than the single maximum Union-wide termination rates are: Switzerland, Turkey, Morocco and Russia.

Union than they do today. This situation could lead to significant net payments to non-Union operators, which are likely to be reflected in increased retail tariffs for consumers in the Union. This could potentially hamper the functioning of the internal market.

The risk is not merely hypothetical but has materialised in the past. The German and Austrian cases[75] show that some third country operators are ready to take advantage of the strict cost orientation enforced in the Union by charging extremely high termination rates (while paying a low regulated rate when the non-Union originated call is terminated in an Union operator network). In one case, a Russian operator charged a German operator 115-fold the regulated rate. This could have had an impact on retail prices paid by German consumers, risking the increase of domestic prices.

Additionally, facing high termination rates for calls to third countries' numbers could prevent Union operators from including such calls in their pan-European calling plans, thereby limiting the availability of those pan-European offers for consumers in the Union and therefore, the achievement of the internal market.

Second, applying the single maximum Union-wide voice termination rates to operators whose pricing for termination services is unrestricted, or not meaningfully restricted, would distort competition among Union operators, as different operators would face different degrees of exposure to such high termination rates, and bring into question the economic sustainability of the harmonised single maximum Union-wide voice termination rates system from the point of view of the Union operators.

Those with a high share of terminated non- Union calls that are not subject to meaningful pricing constraints would have a competitive disadvantage over operators with a low share of non- Union calls, a dimension which is out of control of the operators themselves. Some would be harmed by such high termination rates charged by third country operators, while some would not. That would make it more difficult to achieve the objectives of the market integration sought by the Delegated Regulation, which are reinforcing the single market by removing distortions between operators due to termination rates charged well above cost (see Section 1).

Likewise, the application of high termination rates to certain Union providers would also raise a barrier to trade within the Union as it would result in different conditions and constraints faced by different Union operators as a result of different exposures to international calls (made and received by the operators' customers) which would translate into different competitive conditions faced by such operators, as a result of regulation, i.e. the application of the single maximum Union-wide voice termination rates to calls originated from third country-numbers.

Finally, the application of regulated rates to calls originated from third country-numbers in cases where third country operators charge high termination rates would distort investment incentives, which also risk running counter to foster the single market. This is because investment ability and incentive in the Union (both investment in operators and by operators)

[75] Until recently, the German regulator imposed the same MTRs to all calls, regardless of their origination (EEA and non-EEA). However, at the request of three main operators it changed to the reciprocity approach for calls originated from third country-numbers. The regulator justified this change with the high termination rates charged by many non-EEA operators and resulting harm to end-users. For example, termination rates (in 2018) charged by operators in Morocco, Turkey and Russia were 5 to 115 times higher than the regulated rate for German operators. Additional evidence was provided in the context of case DE/2019/2194, where the parties' arguments relating to its Austrian subsidiary T-Mobile Austria (now: Magenta), were that, as a result of the removal of regulatory price control for non-EEA MTRs in Austria, Austrian operators have gained greater room for negotiation vis-à-vis Swiss network operators, leading to a significant reduction of the reciprocal termination rates from 7-14 cent/min to 2-3 cent/min.

would be distorted by the asymmetrical impact of the exposure to high termination rates for calls terminated outside the Union.

All these factors would risk undermining the objective of furthering market integration that the Delegated Regulation, and more generally the Union regulatory framework for electronic communications networks, strive to achieve.

Therefore, the obligation to apply the maximum regulated termination rates should not apply to calls originating from third country-numbers as that would run counter to the above objective of market integration. However, under certain circumstances, such as where termination rates are lower than or at the level of the maximum termination rates set out in the Delegated Regulation or where these third countries apply equivalent cost-orientation principles to regulate termination of calls to such third countries, the application of the maximum termination rates set out in the Delegated Regulation may not lead to the distortions described above.

Accordingly, there is a need for a specific mechanism in order to accommodate such cases and thus keep the exclusion as narrow and circumscribed as possible. This ensures its application in an open, transparent and non-discriminatory way, taking account of the proportionality principle.

This would therefore require a mechanism to apply regulated rates in such cases based on the following two distinct criteria:

- Criterion A (equal or lower termination rates):

  if a provider of termination services in a third-country applies, for calls originated from a Union-number and terminated to a number on its network, termination rates equal or below the maximum (mobile and/or fixed) termination rates set in the Delegated Regulation for each year for each Member State[76], then the relevant maximum termination rates set in the Delegated Regulation for each year should apply. As this would entail a simple acknowledgment of the level of termination rates applied by each provider included or proposed to be included in agreements with providers of terminations services from the Union, such mechanism would apply as soon as the rates set in the Delegated Regulation become applicable. However, Union providers of termination services will only be obliged to apply such rates if they have all the necessary information regarding rates applied by third country operators. This information requirement should not, however, be abused for the purpose of excluding the third country operator from the application of those rates.

- Criterion B (equivalent regulatory principles applied):

  if a third country regulates (mobile and/or fixed) termination rates, for calls originated from Union-numbers and terminated to numbers of that country, based on principles equivalent to those set out in Article 75 and Annex III of the Code, the Commission, acting on the request from the third country's competent authorities and on the basis of information submitted by that third-country and following an appropriate assessment, may include that third-country to the list in an Annex of the Delegated Regulation to which the regulated termination rates would apply.

As the call origin contributes to define whether the Union-wide termination rates apply or not, it is essential for Union operators to be able to identify the country of origin of the caller. The

[76] As explained above, the relevant maximum mobile termination rates that will trigger this mechanism in 2021, 2022 and 2023 are those set out in paragraphs 2 to 5 of Article 4 of the Delegated Regulation. The relevant maximum fixed termination rates that will trigger this mechanism in 2021 will be those set out by Article 5(2) of the Delegated Regulation.

Calling Line identification (CLI) is the common method used in order to identify the origin (through the country code) of an inbound call via the signalling information associated to that call. In particular, the country of origin of the caller is identifiable via the country code linked to the CLI. In order to send correct invoices and to avoid disputes between operators, Union operators should receive a valid CLI assigned to every incoming call. Therefore, in order to avoid fraudulent calls or routing abuses, Union operators would not be bound to apply Union-wide termination rates to termination of calls if the CLI is missing, invalid or fraudulent.[77]

In some cases, agreements for termination of calls originated from third country-numbers involve the presence of an intermediate operator, i.e. a transit provider, between the originating and the terminating network operator. Given that the termination rates applied by the third country operator, for calls originated from Union-numbers and terminated to third country-numbers, may not always be known or easily verifiable for Union operators, the application of criterion A above (equal or lower termination rates) would normally require the intermediate operator to provide information to the Union operator from which it follows that such conditions are actually met (and such lower or equal rates would be applied for calls originated from Union-numbers by the Union operator and terminated to third country-numbers by the third country operator).[78] In that case, where transit providers (or other intermediaries) resell termination services in third countries to Union operators, the termination rate applied or offered by those transit providers (for calls from the Union to that third country) would be the relevant one for determining if they are equal or lower than the maximum voice termination rates set by this Regulation.

3 Cost models and general methodology

Taking account of the particular characteristics of voice termination markets, the Code requires that the costs of termination services are calculated on the basis of forward-looking long-run incremental costs (LRIC). LRIC models include only those costs which are caused by the provision of a defined increment. An incremental cost approach which allocates only efficiently incurred costs that would not be sustained if the service included in the increment was no longer produced (i.e. avoidable costs) promotes efficient production and consumption and minimises potential competitive distortions.

Avoidable costs are the difference between the identified total long-run costs of an operator providing its full range of services and the identified total long-run costs of that operator providing its full range of services except for the wholesale voice termination service supplied to third parties (i.e. stand-alone cost of an operator not offering termination to third parties). To ensure an appropriate attribution of the costs, a distinction needs to be made between those costs that are traffic-related, i.e. all those fixed and variable costs which rise with increased levels of traffic, and those costs that are non- traffic-related, i.e. all those costs which do not rise with increased levels of traffic. To identify the avoidable costs relevant for wholesale voice termination, non-traffic-related costs should be disregarded. Moreover, it is appropriate to attribute traffic-related costs firstly to other services (e.g. call origination, SMS, MMS, broadband, leased lines) with wholesale voice termination being the final service to be taken into account. The cost allocated to the wholesale voice termination service should thus be equal to the additional cost incurred to provide the service. As a consequence, cost accounting based on a BU-LRIC approach for wholesale voice termination services in fixed and mobile markets should allow only the recovery of costs which would be avoided if a wholesale voice termination service was no longer provided to third parties.

[77] In setting this approach, the Commission services took into account BEREC opinion, p. 23-24.

[78] See also BEREC opinion, p. 24.

The further termination rates move away from incremental costs, the greater the competitive distortions between fixed and mobile markets and/or between operators with asymmetric market shares and traffic flows. Therefore, and in line with Annex III of The Code, it is justified to apply a pure LRIC approach whereby the relevant increment is the wholesale voice termination service and which includes only avoidable costs. A LRIC approach would also allow the recovery of all fixed and variable costs (as the fixed costs are assumed to become variable over the long run) which are incremental to the provision of the wholesale call termination service and would thereby facilitate efficient cost recovery. Further to the LRIC principle, Annex III of the Code also states:

> *"the evaluation of efficient costs shall be based on current cost values; the cost methodology to calculate efficient costs shall be based on a bottom-up modelling approach using long-run incremental traffic-related costs of providing the wholesale voice termination service to third parties"*

As such, the cost model methodology for the single maximum Union-wide voice termination rate shall be based on a Bottom Up Long Run Average Incremental (BU-LRIC) approach. Such a cost model should be based on the efficient technology which a hypothetically new operator would rely on when establishing a network today. Article 75 of The Code and specifically Annex III spells out in detail the requirements for such a cost model, building on the principles established in the 2009 TRR.

Annex III requires that costs of wholesale voice termination rates are to be based on the principles of recovery of costs incurred by an efficient operator, calculated using the pure BU-LRIC approach. Only costs related to traffic which would be avoided in the absence of the provision of a wholesale voice termination service shall be allocated to the cost of terminating a call. In essence, any cost not directly related to termination (such as radio spectrum fees, commercial costs not directly related to the provision of wholesale voice termination and capacity-related costs for services other than termination) should be excluded from the costs of termination services. For the mobile network, the efficient operator modelled should be set to a market share not below 20%. For both the mobile and fixed network, the technology modelled shall be forward looking, based on an IP core network.

3.1 Preparation of the two cost models for the Delegated Regulation

In order to assess the costs of providing wholesale termination services in the Union for the purposes of the Delegated Regulation, the Commission commissioned two independent cost studies: one for mobile[79] and one for fixed[80] networks. The aim was to construct two separate cost models, estimating the wholesale costs of providing mobile and fixed termination services respectively. The two projects were launched independently of each other and were both awarded to Axon Consulting Partners Group (Axon).

The mobile cost model was developed from mid-March 2018 to mid-July 2019 and the fixed cost model from September 2018 to November 2019. At the start of each study, a first workshop with all relevant stakeholders was organised to collect feedback on the methodology proposed by Axon. The aim for both studies was to build models with a similar skeleton facilitating as much as possible the estimation of the relevant mobile/fixed wholesale

[79] Study SMART 2017/0091: "Assessment of the cost of providing mobile telecom services in the EU/EEA countries", Axon Partners Group Consulting, published on 22 July 2019, available here.

[80] Study (SMART 2018/0014): "Assessment of the cost of providing wholesale voice call termination services on fixed networks in the EU/EEA countries", published on 26 November 2019, available here.

costs in each of the 31 EU/EEA countries[81]. The models were based on country-specific input where relevant and, where not, on averages/common values across the EU/EEA. The mobile cost model was finalised and published on 24 July 2019. The fixed cost model was published on 26 November 2019.

To ensure transparency throughout both projects, several steps were taken to associate the NRAs, operators and other stakeholders. These include workshops held and consultations organised over the whole period of the process[82]. Stakeholders were also consulted on the structure, methodology and content of the data gathering exercise itself. Also, a steering committee composed by experts from NRAs was established for both projects and regular meetings between the Commission services, Axon and the Steering Committees were held throughout the projects.[83]

This section provides a description of the two cost models developed by Axon, explains how the Commission services have used these two separate cost studies and current rates in each market as input for setting the single maximum Union-wide voice termination rates, and concludes with the scenarios chosen and the resulting proposed mobile and fixed single maximum Union-wide voice termination rates.

3.2 The mobile cost model

The Axon cost model estimates the costs of providing wholesale mobile roaming services as well as voice termination in 28 EU/EEA countries[84]. Each cost model contains a number of adaptable scenarios, allowing the Commission services to evaluate different scenarios in each country. Although the Axon cost model estimates costs for both wholesale roaming and termination, for the purpose of this Staff Working Document and Delegated Regulation, only the parts related to voice termination will be discussed[85].

3.2.1 Introduction to the model and available scenarios

The Axon cost model is based on a number of methodological choices. First of all, the model is bottom-up, calculating the provision of a service under a given set of methodologies and scenarios. A bottom-up model involves a reasonable approximation of the network that a reference operator would need in order to meet the coverage and capacity requirements of the users. It therefore produces an approximation of the costs that such an operator would bear and provides service-level results under different scenarios. For termination, the Axon cost model allocates costs according purely to the LRIC approach described in the section above.

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[81] From the 31 countries from which data were requested, Iceland, Liechtenstein and Luxembourg decided not to participate in the data collection process for the mobile cost model. Finland, Iceland and Liechtenstein did not participate in the data collection process for the fixed cost model.

[82] See the full publication for all the documents related to interaction with stakeholders in the link of the relevant footnote above.

[83] For the mobile cost model, members of the steering committee also comprised experts from the BEREC roaming EWG, since the mobile cost model also estimated roaming wholesale costs.

[84] The 28 countries for which cost models were estimated are the countries that provided the required data. This includes 26 current Union Member States, one EFTA state (Norway) and the UK. Iceland, Liechtenstein and Luxembourg decided not to participate in the data collection process and no model could be constructed for these countries.

[85] For a general introduction to the cost model we refer to the full publication, available here.

The Axon cost model takes into consideration the latest technology available at the time of constructing the model with adequate information on equipment required. The inclusion of 5G in the model, in particular, was discussed at the first workshop in April 2018. Axon and the Commission services invited stakeholders to provide information on 5G during the data collection process, in June 2018, to be included in the cost model. However, no stakeholder could provide the complete set of data requested on 5G and only a few provided some information. Consequently, 5G could not be included in the model.[86] The termination rates set by the Delegated Regulation will nevertheless apply to all technologies used, including 5G.

With feedback from the operators and NRAs in 26 Union Member States and the UK and Norway, 28 cost models have been populated with data by Axon. This allows the Commission services to carefully assess and compare the costs of providing termination in each Member State. Further, a number of scenarios are available in the Axon cost model, while the consultation rounds have shown a clear preference of the majority of stakeholders[87] for one specific combination of scenarios.

The most preferred[88] option as evaluated by the stakeholders, takes into consideration the following (with the chosen scenario in bracket for each): VoLTE scenario (terminal adoption), annualisation criteria (economic depreciation based on demand), roaming increment (specific roaming increment), allocation of wholesale specific costs (allocation based on drivers), traffic split per technology forecasts (country-specific projections), cell radii[89] (mix EEA average-country specific figures), threshold to identify seasonal patterns (50%), demand (conservative).[90] Please see Section 3.2.2 for the explanation of the combination of scenarios chosen for the single maximum Union-wide mobile voice termination rate.

Figure 3 presents the estimates of the Axon cost model for each of the modelled Member States. These results are obtained under the scenario supported by most stakeholders. As seen, the MTRs throughout the relevant period for the Delegated Regulation (2021-2025) range from around EUR 0.03 cent/min[91] to just under 0.2 cent. Overall, the Axon model has produced 72 scenarios.[92]

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86 See "outcomes of 1st consultation round", published with the full set of materials, available here.

87 Stakeholders here represent both NRAs and operators. In the first consultation round 75 stakeholders participated, with 70% of these representing operators. In the second consultation round the feedback received counted input from 85 stakeholders, 72% of which was operators. Any repeated answer provided from telecom groups have been counted once.

88 Preference refers to the feedback given in the consultation rounds. All stakeholders were invited to indicate which of the possible settings for each scenario they preferred. The most preferred scenario, therefore refers to the scenario that the majority of stakeholders indicated their preference for. The full set of published materials, indicate for each scenario the feedback received.

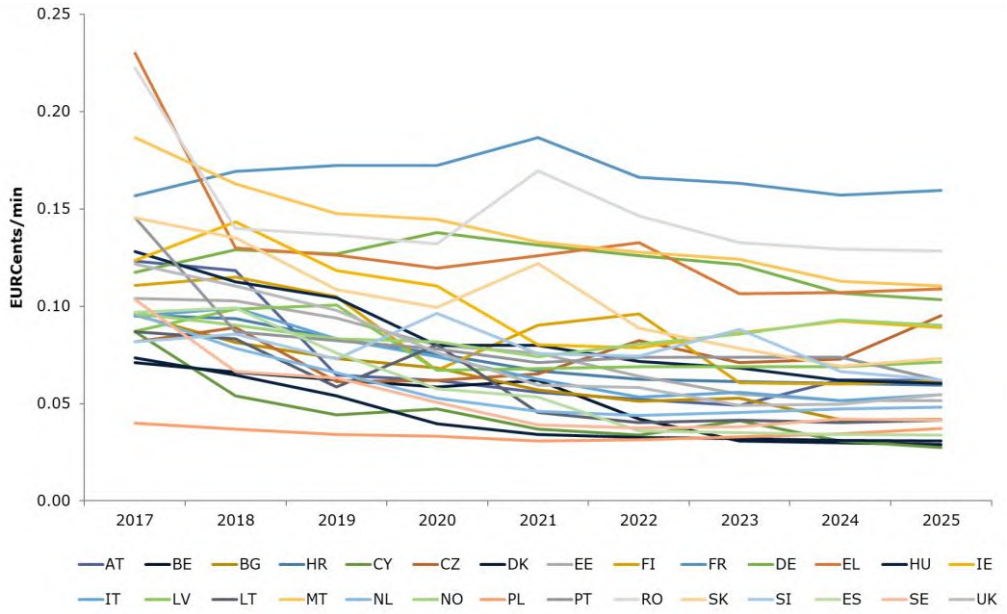
89 A mobile network is also called 'cellular network', in which portions of the networks are called 'cells'. The radius of a cell, the area of the cell, may vary, therefore it is an element considered in the assessment of the costs to provide termination over a mobile network. The lower cell radii the more cells need to be deployed and the higher the costs. Therefore, the network is dimensioned based on cell radii, and costs are then allocated to the relevant service.

90 For a full description of the scenarios and options, please see p. 26-28 of the User manual accompanying the publication of the cost model, available here.

91 For the purpose of this Staff Working Document, "EUR cent/min" is shortened to "cent".

92 The results of all 72 scenarios are available here.

Figure 3: Axon cost model estimated MTRs per country (cent - most preferred scenario)



Source: Axon Consulting*, SMART 2017/0091*

3.2.2 The selected combination of scenarios

To estimate the efficient cost of terminating a mobile call in a hypothetical European mobile network operator, based on estimates of the Axon cost model, each parameter needs to be assessed in order to propose the most suitable scenario. As mentioned in the section above, during the entire process, Axon and the Commission services have consulted and discussed scenarios with stakeholders, the BEREC Steering Committee and at the multiple workshops. The different scenarios as defined in the cost model are: modelling of VoLTE, definition of traffic split per technology forecast, economic depreciation, definition of increments under a LRIC cost standard, allocation of wholesale specific costs, cell radii, traffic patterns and seasonal behaviours and domestic data demand forecasts. Based on the feedback received throughout the process, a final setting for each scenario was proposed and is described below. All 72 results based on different scenarios are published and a detailed assessment is available in the accompanying documents to the cost model[93].

The combination of scenarios of the Axon model most supported by stakeholders is also considered by the Commission services as the appropriate basis for setting the mobile single maximum Union-wide voice termination rate. The arguments for the choice of each specific scenario are described here below, with the chosen scenario in *italic*:

- VoLTE scenario (*Terminal Adoption*)
    - Assumes a country-specific take-up of 3G and 4G technology of the modelled operator, based on the adoption of the relevant device[94] of the users in each Member State. The alternative scenario was to assume a full 4G operator, only providing services over the 4G network, i.e. modelling the costs of a "4G-only hypothetical efficient operator".

[93] For each scenario, at least one alternative exists. For a deeper understanding of these, we refer to the full methodological approach document published, available here.

[94] In this context, the end-user device refers to the equipment used by the end-user to obtain connection, i.e. a mobile phone or similar device.

    - Hence, under the selected scenario, the modelled operator in each Member State supplies a network with a country-specific split of 3G and 4G services, based on terminal adoption.
    - 73% of stakeholders agreed that traffic split should be based on a country-specific split. The Commission services prefer this scenario, as the "full 4G" operator would for most Member States be very far from the reality observed, with the majority of operators reporting an uptake of 4G voice of less than 20%[95]. Therefore, the "terminal adoption" allows for relevant differences between modelled operators.
- Annualisation criteria (*Economic depreciation based on demand*)
    - The annualisation criteria most preferred by stakeholders is to depreciate assets based on the demand they are expected to serve. Two production factors are included in the model to assess the results produced by the economic depreciation. One is depreciation based on "revenues", where the asset is depreciated on the revenue it is expected to generate.
    - 44% of stakeholders preferred depreciation based on demand.
- Roaming increment (*Specific roaming increment*)
    - Treats the mobile roaming increment separately from other non-regulated domestic services, although recognising that roaming services should also contribute to the recovery of joint and common costs.
    - 57% of stakeholders agreed with this approach and a specific increment for roaming is considered.
- Allocation of wholesale specific costs (*Allocation based on drivers*)
    - Using the most preferred scenario, cost allocation is performed based on the drivers (as measured in Gigabytes or Transferred Account Procedure)[96].
    - 67% of stakeholders preferred this approach.
- Traffic split per technology forecasts (*Country-specific projections*)
    - Traffic split per technology forecasts are set at country level based on the information provided by stakeholders. This approach also ensures consistency with the defined scenario under "VoLTE scenario", where the preferred scenario also takes national circumstances into account.
    - 73% of stakeholders agreed that country-specific projections should be taken into account. The Commission services share this view and prefer this scenario to both ensure consistency with the VoLTE scenario and also reflect national circumstances.
    - This scenario also allows for continuation of the data supplied by NRAs, as the historical traffic split per technology (from 2015 to 2017) always is set based on the data originally provided by NRAs in the data collection process.
- Cell Radii (*Mix EEA Average-Country specific figures*)
    - Under this scenario, EEA averages are used for most countries, country-specific figures are considered when their differences with respect to EEA average values are reasonably justified.
    - During the modelling process, cell radii received a lot of attention from the Commission services, Axon and stakeholders. While early consultation revealed a preference for "country-specific projections only", the available data on a country level revealed unexplainable differences for cell radii.

[95] Most operators reported much higher shares of 4G for data, whereas voice over 4G (VoLTE) is less applied. The Axon Cost model includes assumptions on forecasts for split per technology per service, where 4G technology is expected to become more dominant for each of the relevant services modelled (voice, data and SMS).

[96] More on this in section 3.1.15 of the methodological approach document.

During the modelling phase, it was argued by Axon and the Commission services that some results did not reconcile if one relied on country specific figures only.
    - For some Member States however, the data provided for cell radii could be confirmed. Therefore, the chosen scenario relies on country specific figures where relevant and otherwise relies on a mix of EEA countries.
    - This scenario was preferred by 55% of the stakeholders in the second consultation.
- Threshold to identify seasonal patterns (*50%*)
    - Different preferences across stakeholders were observed for this scenario. The alternative to 50% as a threshold is 10% and 30%. This scenario has a larger impact on estimates for roaming and does not change the outcome for voice termination relevant for the purposes of the Delegated Regulation.
    - 64% of stakeholders preferred this approach, setting the seasonality to 50%.
- Demand forecast for data (*conservative*)
    - Setting this scenario to conservative, assumes a lower growth of the domestic data service as compared to the base case scenario. This approach is supported by 34% of the stakeholders. The Commission services also support this scenario, as a more conservative approach in terms of the expected data development is more likely to ensure cost recovery, also if demand does not develop as expected.
    - This is important when approaching the setting of wholesale caps based on projections of either costs or prices, which will be subject to uncertainties regarding the accuracy of such projections, in particular further into the future.

3.2.3 Results of the selected combination of scenarios

Having defined each scenario relevant for the evaluation of the estimated cost of providing mobile voice termination, the resulting voice termination costs are visible in Table 1.

Table 1: Cost estimates for MTRs under the chosen combination of scenarios in the Axon model (in Euro cents/min)

Member State	2019	2020	2021	2022	2023	2024	2025
Austria	0.065	0.062	0.056	0.052	0.049	0.062	0.062
Belgium	0.062	0.059	0.062	0.042	0.031	0.030	0.029
Bulgaria	0.073	0.068	0.057	0.051	0.053	0.042	0.042
Croatia	0.083	0.076	0.067	0.062	0.061	0.060	0.059
Cyprus	0.044	0.047	0.037	0.034	0.041	0.031	0.028
Czech Republic	0.061	0.062	0.065	0.082	0.071	0.073	0.095
Denmark	0.054	0.040	0.034	0.033	0.032	0.031	0.031
Estonia	0.094	0.080	0.076	0.064	0.055	0.052	0.052
Finland	0.105	0.067	0.090	0.096	0.061	0.060	0.061
France	0.172	0.172	0.187	0.166	0.163	0.157	0.160
Germany	0.127	0.138	0.132	0.126	0.121	0.107	0.103
Greece	0.126	0.120	0.126	0.133	0.106	0.107	0.109
Hungary	0.104	0.080	0.080	0.072	0.068	0.062	0.060
Iceland							
Ireland	0.118	0.110	0.080	0.079	0.086	0.093	0.089
Italy	0.083	0.074	0.063	0.053	0.056	0.052	0.054
Latvia	0.101	0.067	0.068	0.069	0.069	0.069	0.071
Liechtenstein							
Lithuania	0.058	0.080	0.046	0.040	0.041	0.040	0.041
Luxembourg							
Malta	0.148	0.145	0.133	0.128	0.124	0.113	0.111
Netherlands	0.066	0.053	0.046	0.044	0.046	0.047	0.048
Norway	0.083	0.082	0.074	0.080	0.086	0.093	0.090
Poland	0.034	0.033	0.031	0.031	0.033	0.035	0.037
Portugal	0.082	0.078	0.071	0.074	0.074	0.074	0.062
Romania	0.137	0.132	0.170	0.146	0.133	0.129	0.129
Slovakia	0.109	0.099	0.122	0.089	0.078	0.069	0.073
Slovenia	0.073	0.096	0.076	0.074	0.088	0.067	0.062
Spain	0.076	0.057	0.053	0.036	0.035	0.034	0.034
Sweden	0.063	0.051	0.039	0.038	0.038	0.042	0.042
United Kingdom	0.098	0.076	0.059	0.058	0.049	0.050	0.055

Note: Iceland, Liechtenstein and Luxembourg decided not to participate in the data collection process. The Axon cost model is therefore does not provide estimates for these countries.

3.2.4 Cost of interconnection ports

To ensure cost recovery for the inclusion of interconnection ports in the definition of the termination service for the purpose of this Delegated Regulation, the Commission services together with Axon consultants investigated the costs of providing this service.

The cost for interconnection ports highly depends on an important assumption, which is the capacity of the ports used. The reason is that the cost corresponding to provide one Mbps notably decreases with the increase of the port capacity. For the purpose of the analysis and in accordance with Annex III of the Code, a modern technology shall be the foundation for any estimation of cost, which in this regard is equivalent to IP-interconnection ports, namely STM1 ports. The previous technology (legacy) is known as E1, where STM1 is able to provide capacity at a cost much lower than seen for E1. Specifically, looking at the capacity provided by STM1 ports (155 Mbps) compared to the capacity possible by the E1 port (2 Mpbs), the resulting analysis is that an STM1 port allows 77,5 (155Mbps/2Mbps) times the capacity of the E1 port, while the cost for STM1 is only around three times the cost of the E1 port. The STM1 port is also the modern technology mostly applied by regulators and hence the port/technology on which the costs for this service is derived under.

Axon has derived the costs for STM1 ports in order to fully assess the costs for including interconnection costs. The impact of adding the estimated costs of these ports to the current mobile/fixed termination calculated cost (based on Pure LRIC standard) is for the mobile on average increase of 0.5% if we assume STM1 ports. Regarding the fixed, the addition of interconnection ports to the cost of the FTR would increase on average of 0.7% if we assume STM1 ports.

3.3 The fixed cost model

The Axon cost model estimates for 28 countries[97] the wholesale costs of terminating a call in the network of a hypothetical efficient fixed network operator. The cost models are constructed as BU-LRIC models, adhering to the requirements of Article 75 of the Code, including Annex III defining the characteristics that any cost model used for the purpose of termination rates must be based on that are described in Section 3.1.

3.3.1 Introduction to the model and available scenarios

On 3 September 2018, the Commission services and Axon held the first workshop on the fixed cost model, inviting fixed network operators and NRAs to express their initial views on the project. The aim was to develop 31 individually populated cost models.[98] Axon and the Commission services shared a number of initial materials with the stakeholders, which they provided feedback on. Based on the feedback and the workshop,[99] a data gathering process was launched on 10 December 2018, in order to populate the cost models under construction by Axon. By February 2019, the requested data sets were provided to Axon, who populated the cost models with individual and country-specific costs. On 6 May 2019, a first draft of the cost model was shared with stakeholders for consultation and feedback. This process served to identify possible areas of improvements to the model, assess the provided input from stakeholders and generally increase accuracy in the results. The final results was presented 26 September 2019 at a stakeholder workshop and the final full set of materials was published on 26 November in the same year, including under all considered scenarios.[100]

The model developed is based on a hypothetical efficient operator applying an IMS[101] network for the provision of fixed voice services.[102] The model covers the period 2015-2025 and bases future traffic on projections based on historical traffic patterns along with data provided by the stakeholders. The model produces in total 288 scenarios.

The Commission services carefully evaluated all combination of scenarios, carefully taking the feedback from stakeholders into account.

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97 26 Union Member States and the UK and Norway

98 Finland, Iceland and Liechtenstein decided not to participate in the process and did not provide data. Therefore, the cost model does not estimate costs for these countries.

99 Full overview of the comments and feedback available here.

100 Available here.

101 IP Multimedia Subsystem is a modern technology delivering IP multimedia services. Compared to the previous circuit-switched network, IMS is a fully IP packet switched network.

102 Applying an IP Multimedia Subsystem (IMS) network was defined based on the feedback received after Workshop 1. The employment of this architecture is also in line with Annex III of the code which states: "the technology choice of the modelled networks shall be forward looking, based on an IP core network".

The determination of fixed services' costs in a bottom-up model heavily depends on the technical inputs. At the same time, as interactions with stakeholders have shown along the project, in some cases, there may be a debate on what are the most suitable inputs to be taken into consideration. In order to address such situations, the model includes different scenarios for the reference prices (equipment costs), the core equipment, market share of the hypothetical efficient operator, demand forecast and dimensioning of four individual network equipment.[103]

In particular, during consultation, stakeholders expressed diverging views on the scenarios relevant for the four modelled core network equipment and dominant capacity constraints[104], particularly on what are the most suitable dominant capacity units (i.e. between voice traffic and subscribers). This was reflected by stakeholders, where a shift in support in relation to the dominant capacity units was observed (see Section 3.3.2).

The majority of operators reported in the Data Request Templates employed during the data gathering process that the dominant capacity units of these core network elements were the number of subscribers. However, during the public consultation on the cost model, some stakeholders provided arguments in favour of dimensioning these four core elements (see bullets below) based on voice traffic instead of subscribers.

To gain further insights into this subject, the Commission services launched on 22 January 2020 an additional data collection exercise with the NRAs to clarify the position of the NRAs on this specific issue. Replies from almost all NRAs where received on 6 February 2020, and aided the Commission services when selecting the final combination of scenarios relevant for the estimating the cost of providing fixed termination services. This is explained in further details in Section 3.3.2.

In addition to the scenarios outlined above, the two sample combinations of scenarios show the model's results considering the following:

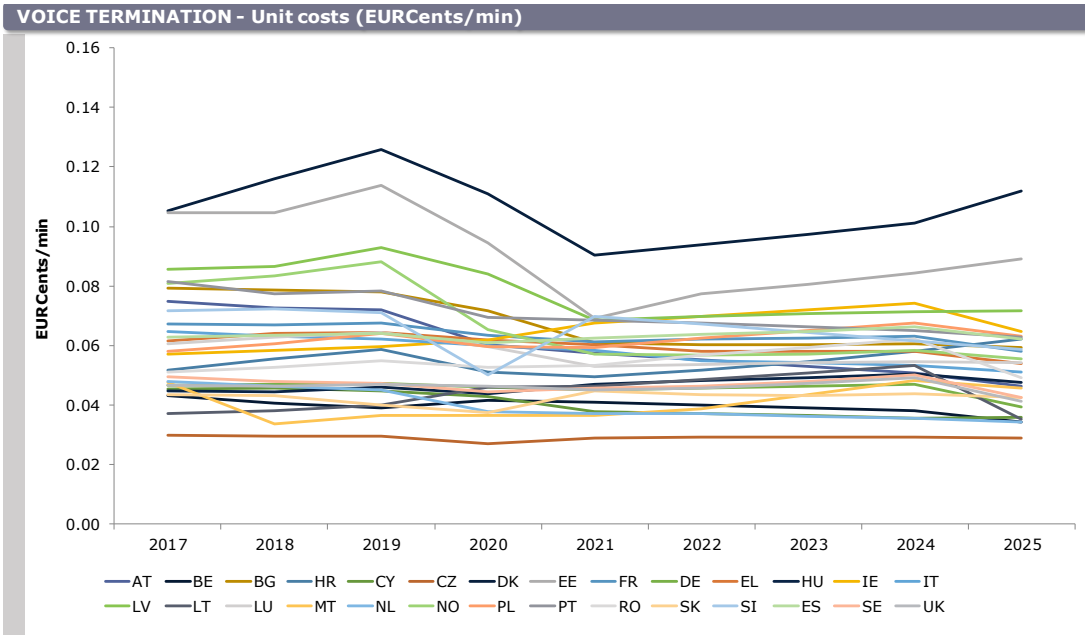
- In Figure 4, the scenarios of Dimensioning of the Application Server (AS), Interrogating Call Session Control Function (I-CSCF), Serving Call Session Control Function (S-CSCF) and Electronic Number Mapping System (ENUM) are assumed 'Based on Voice traffic' for these four core elements.
- In Figure 5, the scenarios of Dimensioning of the AS, I-CSCF, S-CSCF and ENUM are assumed 'Based on Subscribers' for these four core elements.

These two sample scenarios are presented below and identical to those presented in the Executive summary accompanying the publication of the fixed cost model and the choice of these scenarios does not necessarily reflect the final preferences of the Commission service that are described in next section.

[103] See section 3.3.2 for a description of the scenarios chosen for the Delegated Regulation. For a full description of each, please see the full methodological approach document prepared by Axon, available here.

[104] The relevant constraints are either traffic or subscribers. See section 3.3.2 for a further description of these network elements and constraints. For a full description of each, please see the full methodological approach document prepared by Axon, available here.

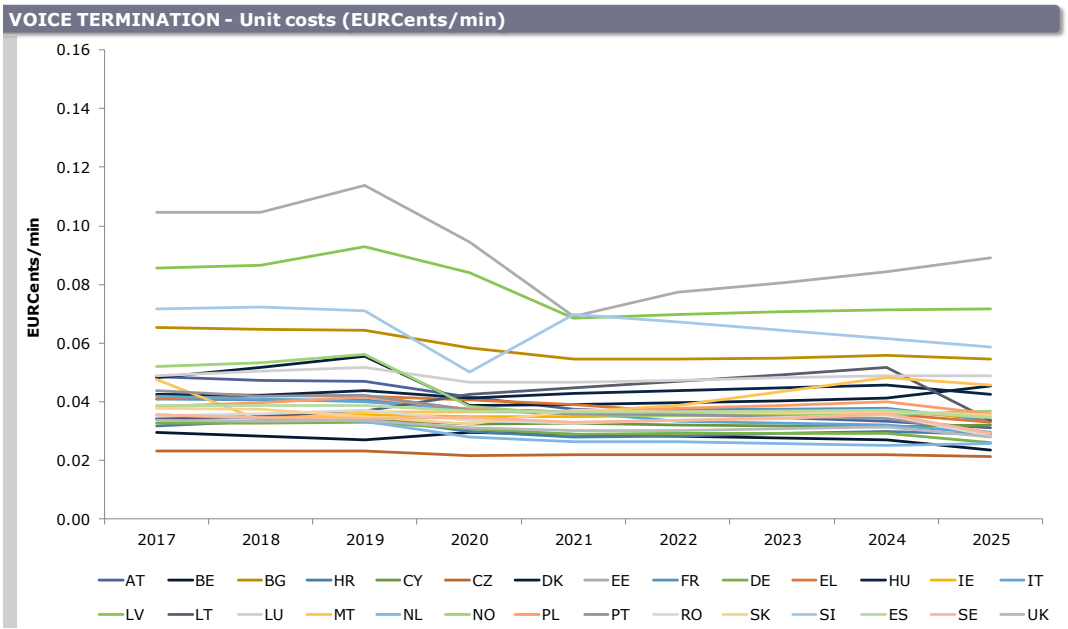
Figure 4: Axon cost model for FTRs per country – core elements based on voice



Source: Axon Consulting, SMART 2018/0014

Under this scenario, the four core elements are all set to traffic as the dominant capacity constraint and the estimated FTRs from 2019 to 2025 range from just above 0.03 cent to around 0.12 cent with the majority of estimated FTRs found in the range of 0.03 – 0.07 cent. The highest estimated costs of 0.12 cent are found in Denmark in 2019 under this scenario.

Figure 5: Axon cost model for FTRs per country – core elements based on subscribers



Source: Axon Consulting, SMART 2018/0014

Under this scenario, the four core elements are all set to subscribers as the dominant capacity constraint and the estimated FTRs from 2019 to 2025 range from around 0.02 cent to around 0.011 cent, with most estimates being between 0.02 - 0.06 cent. The highest estimated costs of 0.011 cent are found in Estonia in 2019 under this scenario.

3.3.2 The selected combination of scenarios

To estimate the efficient cost of terminating a fixed voice call in a hypothetical European fixed network, based on estimates of the Axon cost model, each individual possibility needs to be assessed. During the entire process, Axon and the Commission services have consulted on and discussed the various scenarios with stakeholders, the BEREC Steering Committee and experts from the individual NRAs at the multiple workshops. Based on the feedback received throughout the process, a final combination of scenarios is proposed.

For most of the selected scenarios, the setting preferred by the Commission services is also the setting preferred by most stakeholders. Each setting chosen per scenario (in *italic* below) and the arguments are presented below, together with information on the setting most preferred by stakeholders.

- Core equipment costs based on (*Discrete price catalogues*)
    - Setting this scenario to price catalogues means that only a set of configurations/capacities for each core network element is available (discrete points). In the dimensioning module of the cost model, if the capacity required falls between two configurations, the higher one is selected.
    - In the alternative scenario, the set of configurations/capacities of the `Prices Catalogues´ option is connected by means of straight lines to produce a continuous function for each core network element. In the dimensioning module, the cost of the core network element is selected as the intersection of the corresponding capacity with this continuous function.
    - From the feedback, 78% of the stakeholders preferred the core platform dimensioning based on price catalogues. The Commission services share this view and apply this scenario as the relevant input.
- Market share of the hypothetical efficient operator (*Incumbent*)
    - In the chosen scenario, the market share of the incumbent operator in each country is used for the size of the reference operator for the individual cost models for each Member State (as long as the incumbent has a minimum 20% market share).
    - The two other possibilities were to fix the market share of the incumbent at either 25% or 50% for all individual cost models.
    - The incumbent scenario is favoured by the Commission services as well as by 50% of the stakeholders providing feedback. This setting is preferred due to its capabilities to incorporate the national circumstances when estimating the efficient costs. This takes into account that market shares greatly differ among Member States.
    - Therefore, the Commission services also favour the scenario that have received the largest percentage of support by the stakeholders and sets this scenario to Incumbent market share.
- Demand forecasts (*Base case*)
    - In the scenario selected by the Commission services, the growth rates observed in the historical period (2015-2018) have been directly used to estimate the future demand for voice services.

    - From both the data collected during the data collection process and the feedback received, the Commission services do not see any higher uncertainty concerning the future for the fixed network. If uncertainty prevailed, one could argue for applying a more conservative forecast in order to compensate investors and hereby potentially counter the expected uncertainty.
    - From the stakeholder feedback, 53 % of these preferred the conservative scenario, whereas 39 % preferred the base case scenario.
    - Based on the arguments above, the Commission services set the demand forecast to base case as relevant input to the final scenario for estimating the FTR mostly due to limited uncertainty of demand in the fixed networks.
- Dimensioning of the Application Server (*Subscribers*)
    - As explained in the section above, in the initial data gathering process 90% of the stakeholders argued that the capacity constraint for AS should be subscribers. In the consultation phase, the preferred constraint (with 53% support) was voice traffic.
    - In a follow-up questionnaire sent by the Commission services to NRAs, there was a preference for subscribers over traffic as the most dominant capacity constraint.
    - As subscribers had by far the highest initial support in the data gathering process as well as being the most preferred in the separate follow-up questionnaire, the Commission services consider that subscribers is the dominant capacity constraint for the AS core network equipment best reflecting the characteristics of the cost model.
- Dimensioning of the Interrogating Call Session Control Function (*Traffic*)
    - Initially, stakeholders showed support for subscribers as the dominant capacity constraint for the I-CSCF core network equipment, with 80% preferring this setting. In the second round of feedback, the preferred constraint with an 80% support was voice traffic.
    - This support was also confirmed at the follow-up questionnaire performed by the Commission services, where the majority argued for voice traffic as the capacity constraint.
    - Based on these insights, the Commission services consider traffic as the dominant capacity constraint for the I-CSCF core network equipment.
- Dimensioning of the Serving Call Session Control Function (*Traffic*)
    - Also here, the data gathering showed strong support for subscribers as constraint, with 79% of stakeholders preferring this setting. The consultation showed a clear shift to voice traffic as constraint.
    - The follow-up questionnaire by the Commission services underlined traffic as constraint, so with both the consultation and questionnaire showing a clear preference for traffic as constraint the Commission services also consider the dominant capacity constraint for S-CSCF to be voice traffic.
- Dimensioning of the Electronic Number Mapping System (*Traffic*)
    - For ENUM, the initial data gathering showed a 73% support for subscribers as primary constraint. In the second round, this has changed to a 67% support for voice traffic as a constraint.
    - The latest questionnaire distributed to NRAs revealed a slight support for voice traffic as dominant constraint over subscribers.
    - In light of the feedback received, the Commission services consider voice traffic as the most supported scenario for ENUM.

3.3.3 Results of the selected scenario

Having defined each parameter for the scenarios relevant for the estimated cost of providing fixed termination, the resulting voice termination costs are visible in Table 2.

Table 2: Cost estimates for fixed termination under the chosen combination of scenario in the Axon model (cent)

Member State	2019	2020	2021	2022	2023	2024	2025
Austria	0.064	0.053	0.047	0.045	0.043	0.041	0.039
Belgium	0.037	0.037	0.035	0.034	0.033	0.032	0.033
Bulgaria	0.063	0.059	0.055	0.054	0.054	0.054	0.052
Croatia	0.052	0.044	0.047	0.049	0.051	0.053	0.055
Cyprus	0.047	0.045	0.044	0.043	0.043	0.042	0.042
Czech Republic	0.026	0.027	0.028	0.028	0.028	0.028	0.028
Denmark	0.074	0.053	0.052	0.054	0.055	0.057	0.055
Estonia	0.107	0.087	0.065	0.065	0.066	0.067	0.068
Finland							
France	0.058	0.055	0.053	0.054	0.053	0.053	0.050
Germany	0.045	0.047	0.045	0.046	0.046	0.047	0.038
Greece	0.058	0.057	0.055	0.054	0.054	0.053	0.050
Hungary	0.042	0.041	0.043	0.044	0.045	0.045	0.042
Iceland							
Ireland	0.042	0.047	0.045	0.045	0.046	0.046	0.038
Italy	0.055	0.053	0.051	0.048	0.047	0.046	0.046
Latvia	0.088	0.078	0.064	0.064	0.065	0.065	0.065
Liechtenstein							
Lithuania	0.033	0.036	0.037	0.038	0.038	0.039	0.030
Luxembourg	0.049	0.043	0.043	0.043	0.043	0.044	0.043
Malta	0.034	0.034	0.034	0.036	0.040	0.043	0.042
Netherlands	0.040	0.032	0.030	0.030	0.029	0.028	0.028
Norway	0.078	0.056	0.051	0.050	0.050	0.050	0.050
Poland	0.055	0.051	0.051	0.053	0.054	0.055	0.054
Portugal	0.062	0.053	0.050	0.049	0.048	0.046	0.045
Romania	0.056	0.057	0.058	0.062	0.064	0.066	0.053
Slovakia	0.037	0.034	0.039	0.038	0.037	0.037	0.037
Slovenia	0.057	0.038	0.036	0.034	0.032	0.030	0.036
Spain	0.062	0.060	0.059	0.060	0.060	0.060	0.060
Sweden	0.046	0.044	0.043	0.044	0.044	0.045	0.038
United Kingdom	0.043	0.042	0.041	0.041	0.041	0.042	0.039

Source: Axon Consulting, SMART 2018/0014

Note: Finland, Iceland and Liechtenstein decided not to participate in the data collection process. Therefore, there are no cost estimates for these countries.

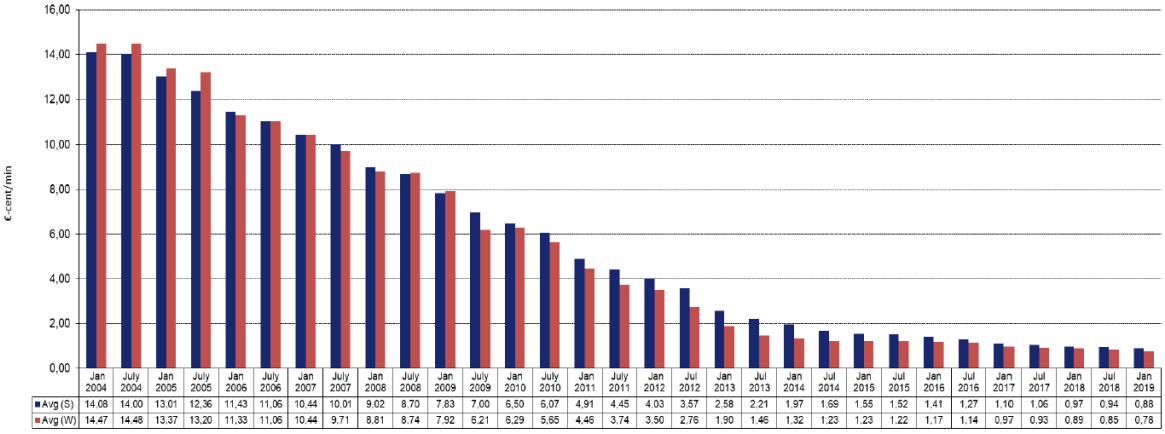
4 Setting and implementation modalities of the single maximum Union-wide mobile voice termination rate

As seen in table 1, the MTRs estimated by the mobile cost model are below rates currently applied in the Member States. This section first describes the evolution of MTRs and the current regulatory situation, followed by an explanation on how the single maximum Union-wide mobile voice termination rate would be set as well as by a description of the measures proposed for the gradual implementation of the single maximum Union-wide mobile voice termination rate.

4.1 Current mobile termination rates

All across Europe, MTRs have been on a downwards trend for some time[105]. From January 2004 to July 2019, the European average declined by more than 93% (from 14.08 to 0.88 cent).[106] The decline was particularly steep until 2014, since then it has been more moderate, as seen in *Figure 6*. Note that the historical development as provided by BEREC includes a number of countries outside the Union.

Figure 6: Average MTRs since 2004



	Jan 2004	July 2004	Jan 2005	July 2005	Jan 2006	July 2006	Jan 2007	July 2007	Jan 2008	July 2008	Jan 2009	July 2009	Jan 2010	July 2010	Jan 2011	July 2011	Jan 2012	Jul 2012	Jan 2013	Jul 2013	Jan 2014	Jul 2014	Jan 2015	Jul 2015	Jan 2016	Jul 2016	Jan 2017	Jul 2017	Jan 2018	Jul 2018	Jan 2019
Avg (S)	14.08	14.00	13.01	12.36	11.43	11.06	10.44	10.01	9.02	8.70	7.83	7.00	6.50	6.07	4.91	4.45	4.03	3.57	2.58	2.21	1.97	1.69	1.55	1.52	1.41	1.27	1.10	1.06	0.97	0.94	0.88
Avg (W)	14.47	14.48	13.37	13.20	11.33	11.06	10.44	9.71	8.81	8.74	7.92	6.21	6.29	5.65	4.46	3.74	3.50	2.76	1.90	1.46	1.32	1.23	1.23	1.22	1.17	1.14	0.97	0.93	0.89	0.85	0.78

Source: BEREC - Termination rates at European level, July 2019. BoR (19) 234Rev.1
Note: BEREC includes the following countries in their reporting: Albania, Austria, Belgium, Bulgaria, Switzerland, Cyprus, Czechia, Denmark, Germany, Estonia, Greece, Spain, Finland, France, Croatia, Hungary, Ireland, Iceland, Italy, Liechtenstein, Lithuania, Latvia, Luxembourg, Montenegro, Malta, North Macedonia, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Sweden, Slovenia, Slovakia, Turkey, United Kingdom. Therefore, these averages can deviate slightly from other numbers informed in this Staff Working Document.

The differences in MTRs can be due to the methodology used (cost model vs benchmarking), the type of cost model used, model specifications applied, time of update and differences in actual costs. Model specifications may further diverge regarding factors such as cell radii or demand forecast. Regarding 'time of update', it should be noted that some of the above MTRs were calculated relatively recent while others date back to several years ago.

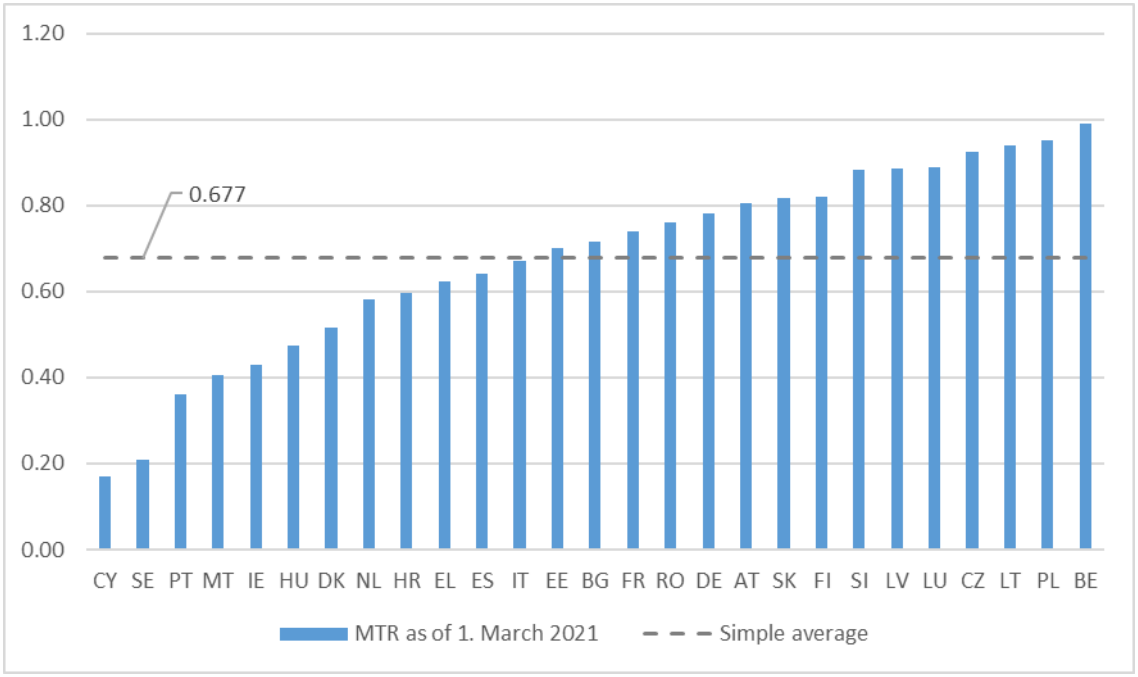
Today, most NRAs within the Union relies on a pure BU-LRIC cost model. The Estonian, Latvian, Lithuanian and Romanian NRAs have not developed specific pure BU-LRIC cost model, but use benchmarks (consisting of pure BU-LRIC rates in other MSs), whereas the Finnish NRA uses a fully distributed/allocated cost model. Figure 3 below presents the current and notified[107] mobile termination rates applied by each NRA as well as the current simple average of termination rates.

[105] This data from BEREC includes all Member States plus Albania, Switzerland, Iceland, Lichtenstein, North Macedonia, Norway, Russia and Turkey.

[106] BEREC, Termination rates at European level, July 2019, p. 24.

[107] Notified rates are taken into account if they have been notified to the Commission before 1 November 2020 and are scheduled to enter into force before 1 March 2021. Otherwise, the currently applicable rate is used. The cut-off date of 1 March 2021 has been chosen by reference to the most likely date of entry into force of the Delegated Regulation, which takes into account the two-month period from notification during which the European Parliament and Council can object to the Regulation.

Figure 7: Current/notified MTRs per country (cent)



Source: European Commission.

Current/notified MTRs across the Union are in the range of 0.17-0.99 cent.[108] The simple average of the MTRs across the Union is 0.677 cent, whereas for the 22 Member States using pure BU-LRIC models to set MTRs[109], the simple average is 0.644 cent.

4.2 The single maximum Union-wide mobile voice termination rate

Looking at the cost estimates from Table 1, France is the Member State with the highest expected cost of providing wholesale termination services, under the scenario most preferred by stakeholders and the Commission services. Therefore, to ensure cost recovery for operators in all Member States in all relevant years (2021-2025), the Commission services consider that the highest value estimated for France in the relevant years (2021-2025), which has a maximum of 0.19 cent in 2021 and an estimated cost of 0.16 cent in 2025 should be considered as the relevant output of the Axon model. By taking the highest observed cost in the period, the proposal ensures cost recovery for all operators within the Union throughout the currently applicable years of the single maximum Union-wide voice termination rates.

This approach is also consistent with economic theory as generally, there is an asymmetric risk of setting prices too high or too low with the risks of setting the prices too low being greater than the risk of setting prices too high (i.e. in case of doubt it is preferable to risk setting the prices too high rather than too low)[110]. This is because the problem of under-

[108] In case of rates expressed locally in currencies other than the Euro, the average of the relevant exchange rate from 1 September, 1 October and 2 November 2020 was used. There was no exchange rates published for 1 November 2020 as this was a Sunday. Accordingly, the rates published on the following first weekday was used.

[109] Estonia, Finland, Lithuania, Latvia and Romania relies on benchmarking rather than pure BULRIC.

[110] This is a generally accepted principle of wholesale price regulation, for example, see: Competition Economists Group, Uplift asymmetries in the TS-LRIC price, February 2015, pp. 5-6; Ballance, T. and Taylor, A., Competition and Economic Regulation in Water, p. 76-79, available here; Oxera Consulting, Aiming high in setting the WACC: framework or guesswork?, March 2015, available here.

investment (if the MTRs are set too low) is considered to be of greater importance to consumer welfare, including both quality and long-term prices for consumers, than the problems derived from over-investment (if the MTRs are set too high). This is important when approaching the setting of wholesale caps based on projections of either costs or prices, which will be subject to uncertainties regarding the accuracy of such projections, in particular further into the future.

The Axon cost model does not include the economic effects of the COVID-19 pandemic. Any possible long-term effects of which, if relevant for the efficient cost estimates required by the Code, would be captured in future revisions of the cost model.

Taking the above into account, as well as MTRs currently prevailing in the Union and the general objective of ensuring simplicity in the regulation, the results from the cost model at 0.16 in 2025 cent are rounded[111] to 0.2 cent, also allowing for a safety margin to account for possible inaccuracies and uncertainties in the in the estimated efficient cost. Further, the safety margin ensures cost-recovery for the costs of providing interconnection ports, as included in the definition of the termination service for the purpose of the Delegated Regulation.

4.3 Implementation modalitites for the single maximum Union-wide mobile voice termination rate

In order to avoid large disruptions in the implementation of the single maximum Union-wide mobile voice termination rate in some Member States, and based on established regulatory practice, it is appropriate to introduce a glide path whereby the (cost efficient) single maximum Union-wide mobile voice termination rate is reached only after a number of years. This section explains the modalities for a glide path that assures that there is a smooth path to reach the single maximum Union-wide mobile voice termination rate in cases where the current average termination rates are significantly above the estimated efficient cost level in order to avoid unwanted disruptions.

4.3.1 Glide path

Applying a glide path is common regulatory practice[112], in cases where current regulated termination rates are significantly above any planned rate to replace it.

In such cases, the glide path provides an effective tool to smoothen the transition to reach the estimated efficient cost level while avoiding unwanted disruptions. By way of contrast, the purpose of a transitional period would be to avoid unwanted disruption in certain Member States, as a result of previously existing rates, rather than allowing for an overall gradual reduction of termination rates, as the glide path does. The use of a glide path has been for instance used in the implementation of the Roam-Like-At-Home (RLAH) regime, where the wholesale caps for data were subject to a yearly decreasing cap. In case of roaming, a relative lengthy glide path of six years was implemented for wholesale caps on data, which was

[111] Rounding of values for rates is common practice supported by NRAs and operators.

[112] In May 2019, the German NRA notified a measure under Article 7 proposing a glide path for fixed termination markets. The glide path starts from the EU/EEA pure BU-LRIC benchmark FTR considered by BNetzA (0.08 cent) and applies linear reductions leading up to the cost-efficient rate calculated through BNetzA's cost model (0.03 cent) for 2022.

necessary due to the very significant drop in these caps.[113] The use of a glide path has contributed to the successful implementation of the RLAH, where the actual wholesale costs have been declining in line with this glide path and often below the cap levels.[114]

The Commission services consider the glide path also as a relevant tool for implementing the single maximum Union-wide mobile voice termination rate in cases where current average termination rates are significantly above the estimated efficient cost level. The aim of the glide path is to ensure an overall smooth transition to the target maximum rate, which is significantly lower than current average MTRs. In this case, the glide path provides an effective tool to reach the estimated efficient cost level in a manner that avoids unwanted disruptions.

As regards a glide path's length, a very short glide path of for example one year, would ensure a very swift application of the cost efficient single maximum Union-wide mobile voice termination rate, at the potential loss of a sufficiently smooth decrease. It would not meet the objective of providing an appropriate period for operators to adjust to changes in their cash-flows and revenue streams, which could potentially be caused by a rapid and drastic drop in the mobile termination rate.

On the other hand, the longer the glide path, the more significant the risk of prolonging a rate higher than the level of efficient costs for an excessive or unnecessary period of time, to the detriment of consumers and of operators with negative termination balance. At the same time, a long glide path contributes to a smooth application.

The balancing exercise for the duration of the glide path considers, on one hand, smoothening the effects of the single maximum Union-wide mobile voice termination rates and, on the other hand, the need for a swift application of the efficient costs established.

Feedback received

The public consultation asked about "*the appropriate period (within 5 years) before the Eurorates achieve the level based on efficient costs*", both for mobile or fixed termination rates. Respondents' views regarding the duration of the glide path were mixed. The most common response (23%) supported a glide path of four years, although a large share of respondents found shorter durations more appropriate, such as two-three years (17%), less than two years (15%), or no glide path (9%).

In particular BEREC considers that the duration of the glide path should be at most three years. A number of operators were in favour of the longest possible period (five years) while other operators and associations are against any glide path. Some other respondents, including NRAs and operators, highlight that only if the required rate changes drastically a glide path would be needed, the length of which would depend on the final level of the rates relative to current rates. Citizens provide different preferences regarding the duration of the glide path ranging from two months to five years.

The feedback received under "Have your say!" was very diverse regarding the glide path. Some respondents argued for no glide path at all while other asked for a longer duration.

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[113] See article 1 (4) of the *Regulation (EU) 2017/920 of the European Parliament and of the Council of 17 May 2017 amending Regulation (EU) No 531/2012 as regards rules for wholesale roaming markets*. For roaming, the following wholesale price caps where applicable in 2019: EUR 0.032 min for calls made, EUR 0.01 for sms, EUR 4.5 for a GB of data. From 1 January 2020, the new cap for data is EUR 3.5 GB. It will then decrease to EUR 3 GB in 2021 and 2.5 GB in 2022. In comparison, those caps were EUR 0.05/min, EUR 0.02/SMS and EUR 50 /GB until 15 June 2017.

[114] Report from the Commission the European Parliament and the Council on the review of the roaming market, available https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=63423.

The BEREC opinion '*concludes that the proposed three-year glide path will allow for an overall gradual reduction of mobile termination rates and takes into account the need for a swift application of the efficient costs established.*'[115]

Commission services' views

As regards the single maximum Union-wide mobile voice termination rates, the purpose of the glide path is to allow operators (overall in the Union) a smooth decrease to the final cost-efficient single maximum Union-wide mobile voice termination rate of 0.2 cent. As the current/notified average MTR is 0.677 cent and the lowest MTR is 0.17 cent[116], this implies a balancing between:

1) ensuring a smooth decrease for those Member States with high regulated MTRs today, and
2) implementing the rate based on the estimated efficient costs as soon as possible to achieve the objectives of Article 75 EECC.

The Commission services consider that a glide path is required, given that there is a significant difference between the average of current regulated mobile termination rates and the estimated cost efficient single maximum Union-wide mobile voice termination rate.

4.3.1.1 Glide path for the single maximum Union-wide mobile voice termination rate

Considering the current range of MTRs across Member States and the cost efficient single maximum Union-wide mobile voice termination rate of 0.2 cent, the Delegated Regulation defines a glide path of three years, allowing Member States to smoothly move towards the target single maximum Union-wide mobile voice termination rate and to avoid unwanted distortions. The glide path rate starts in 2021[117] at 0.7 cent, a level close to the current simple average of MTRs and should decline yearly before reaching the final single maximum Union-wide mobile voice termination rate at the end of the glide path. As a glide path has the purpose of smoothening the impact of the rates reduction, the glide path rate for any given year is mandatory for Member States with current termination rates above the particular glide path rate. As such, any Member State with current MTRs at a level below the glide path rate of any year shall maintain such rate until the glide path rate is below their currently applied rate. Taking the above considerations on the length of such a glide path, the Delegated Regulation establishes a three-year glide path, reaching the final cost efficient single maximum Union-wide mobile termination rate in 2024. A length of three years strikes a good balance of the elements mentioned above, especially taking into account the exceptional situation post COVID19, while taking also well into account the feedback received from stakeholders. A three-year glide path also reflects the feedback received from BEREC, arguing for a glide path not exceeding three years, and is consistent with the regulatory practice.

The Commission services consider that under the current situation brought forward by COVID-19, the glide path shall decrease less in the beginning to further smoothen the impact of reduced termination rates. Any significant yearly decreases in the termination rates should,

[115] BEREC opinion, BoR (20) 190, p. 3.

[116] In Cyprus.

[117] More precisely, it starts on the 1st day of the third month after entry into force of the Delegated Regulation. As an example, if it enters into force on 15 February 2021, the first day of the third month will be 1 May 2021. The year 2021 is used as a shorthand for the period starting from that date and ending on 31 December 2021.

as much as possible, be avoided, especially in the short-term when the potential impact of the COVID19 crisis may be most apparent and the post COVID19 recovery phase will be essential.

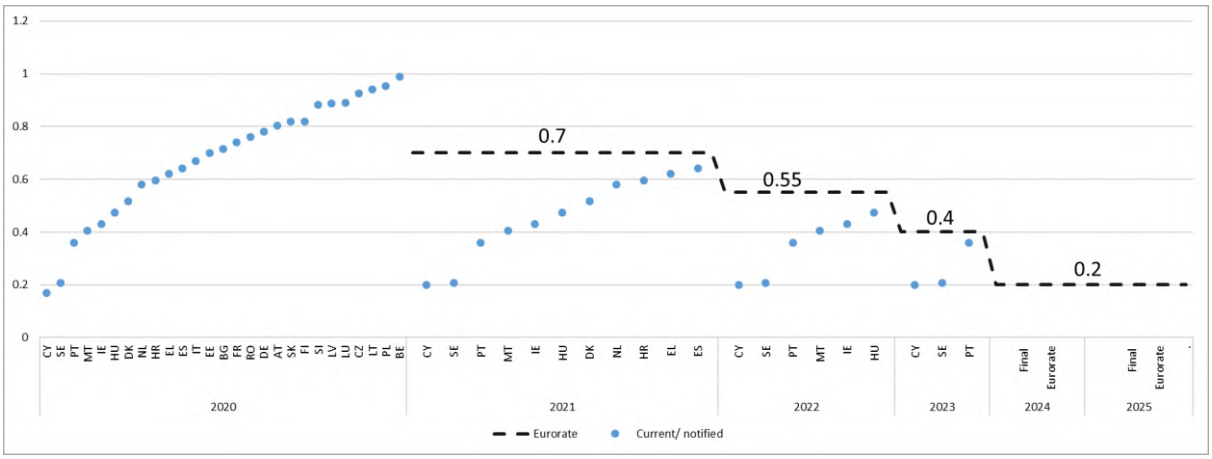
With the purpose of ensuring a smooth application of the single maximum Union-wide voice termination rate and taking the current simple average of 0.677 cent into account the starting point of the single maximum Union-wide mobile voice termination rate glide path should be 0.7 cent and decreasing each year as follows, to ensure smaller decrease in the first years, reaching the estimated efficient cost rate in 2024:

- 0.7 cent for the first year (up to 31 December 2021);
- 0.55 cent for the second year (2022);
- 0.4 cent for the third year (2023) and
- 0.2 cent as the final single maximum Union-wide mobile voice termination rate in the fourth and fifth year (2024 and 2025).

Starting the first year of the glide path from a level very close to the current simple average further avoids initial large negative distortions on the revenues in year 2021, which may be crucial for Union economic recovery. With the interest of ensuring a smooth transition to the single maximum Union-wide voice termination rate, the starting point of 0.7 cent in 2021 should decrease by 0.15 cent in the first two years and by 0.2 cent in the third year. Consequently, in 2021 the Member State with the highest regulated mobile termination rate today (Poland) will face a decrease by 30% reaching, with the other Member States that are above 0.7 cent, a point 3% higher than the simple average of the current maximum regulated mobile termination rates. Then the by year decrease of the glide path rate will be -21% in 2022, -23% in 2023 and -50% in 2024.

The proposed reductions in mobile termination rates increase at each step of the glide path. This allows for an easier adjustment on the operator' side because they will have more time to prepare for the bigger steps further ahead.

Figure 8: Current/notified MTRs and glide path (cent)



Source: European Commission

As seen in figure 8, the glide path to reach the single maximum Union-wide mobile voice termination rate involves a yearly decrease. By proposing the glide path for 2021 to start at 0.7 cent, the maximum mobile termination rates in 15 Member States - where the current rates are at or above this rate - will have to decrease by 2021 to the rate level of the glide path. In the ten Member States where the current mobile termination rates are below 0.7 cent and above the efficient rate of 0.2 cent, the current regulated maximum mobile termination rates can be maintained in 2021 and beyond until the glide path is at, or below, the level of the

respective national mobile rates in place today. For one Member State (Cyprus), the current regulated termination rate set at 0.17 cent is below the level of the efficient rate proposed. In this situation, the Cypriot operators may apply the maximum efficient rate of 0.2 cent from start of application of the Union-wide maximum termination rates in 2021.

As seen, when the glide path rate decreases, the rates in an increasing number of Member States decrease to join the glide path rate, reaching the efficient rate in all Member States by 2024. This approach will reduce differences in MTRs across the Union and make a significant step towards harmonisation of the MTRs whilst avoiding unnecessary temporary fluctuations in the rates that would be disproportionate and not justified. Table 3 provides an overview of the current MTRs and the maximum mobile termination rate allowed during the glide path period in each of the Member States that benefit from it.

Table 3: Current/notified MTRs and maximum MTRs in years 2021-2025 (euro cent)

Member State	Current MTR applied by NRA	Maximum MTR in 2021	Maximum MTR in 2022	Maximum MTR in 2023	Maximum MTR in 2024	Maximum MTR in 2025
Austria	0.80	0.70	0.55	0.40	0.20	0.20
Belgium	0.99	0.70	0.55	0.40	0.20	0.20
Bulgaria	0.72	0.70	0.55	0.40	0.20	0.20
Croatia	0.60	0.60	0.55	0.40	0.20	0.20
Cyprus	0.17	0.20	0.20	0.20	0.20	0.20
Czechia	0.93	0.70	0.55	0.40	0.20	0.20
Denmark	0.52	0.52	0.52	0.40	0.20	0.20
Estonia	0.70	0.70	0.55	0.40	0.20	0.20
Finland	0.82	0.70	0.55	0.40	0.20	0.20
France	0.74	0.70	0.55	0.40	0.20	0.20
Germany	0.78	0.70	0.55	0.40	0.20	0.20
Greece	0.62	0.62	0.55	0.40	0.20	0.20
Hungary	0.47	0.47	0.47	0.40	0.20	0.20
Ireland	0.43	0.43	0.43	0.40	0.20	0.20
Italy	0.67	0.67	0.55	0.40	0.20	0.20
Latvia	0.89	0.70	0.55	0.40	0.20	0.20
Lithuania	0.94	0.70	0.55	0.40	0.20	0.20
Luxembourg	0.89	0.70	0.55	0.40	0.20	0.20
Malta	0.40	0.40	0.40	0.40	0.20	0.20
Netherlands	0.58	0.58	0.55	0.40	0.20	0.20
Poland	0.95	0.70	0.55	0.40	0.20	0.20
Portugal	0.36	0.36	0.36	0.36	0.20	0.20
Romania	0.76	0.70	0.55	0.40	0.20	0.20
Slovakia	0.82	0.70	0.55	0.40	0.20	0.20
Slovenia	0.88	0.70	0.55	0.40	0.20	0.20
Spain	0.64	0.64	0.55	0.40	0.20	0.20
Sweden	0.21	0.21	0.21	0.21	0.20	0.20

Pursuant to Article 75(e) of the Code, the Commission shall consider the need to allow for a transitional period of no longer than 12 months in order to allow adjustments in Member States where this is necessary on the basis of rates previously imposed. As the Delegated Regulation sets out a glide path of three years for the implementation of the single maximum Union-wide mobile voice termination rate, starting very close to the current simple average, no additional transitional period for the single maximum Union-wide mobile voice termination rate is required.

5 Setting and implementation modalities of the single maximum Union-wide fixed voice termination rate

This section first describes the evolution of FTRs and the current regulatory situation, followed by an explanation of how the single maximum Union-wide fixed voice termination rate has been set as well as by a description of the measures proposed for the gradual implementation of the single maximum Union-wide fixed voice termination rate.

5.1 Current fixed termination rates

Current/notified[118] FTRs across the Union are in the range of 0.028-2.8 cent[119]. This wide range (highest value is 100 fold the lowest) is mainly due to the very high rates applied in Finland and Poland. The rates in these two countries are not based on a bottom-up LRIC model in accordance with the TRR.[120] Thus, the FTRs in Finland and Poland are outliers both in terms of value and calculation method. On that basis, the Commission services consider that they should be treated differently to other Member States.

Most NRAs (23) use pure BU-LRIC models to set their national FTR. The German regulator applies a glide path rate toward a pure BU-LRIC rate. The Estonian, Latvian and Lithuanian NRAs use benchmarks (of pure BU-LRIC rates in other Member States) and the Polish and Finnish[121] NRAs use fully distributed/allocated cost models.[122]

The figure below shows the current/notified FTRs for each Member States and the average across the Union. The average is not weighted and does not include the two outliers, Poland and Finland.

[118] Notified rates are taken into account if they have been notified to the Commission before 1 November 2020 and are scheduled to enter into force before 1 March 2021. Otherwise, the currently applicable rate is used. The cut-off date of 1 March 2021 has been chosen by reference to the most likely date of entry into force of the Delegated Regulation, which takes into account the two-month period from notification during which the European Parliament and Council can object to the Regulation.

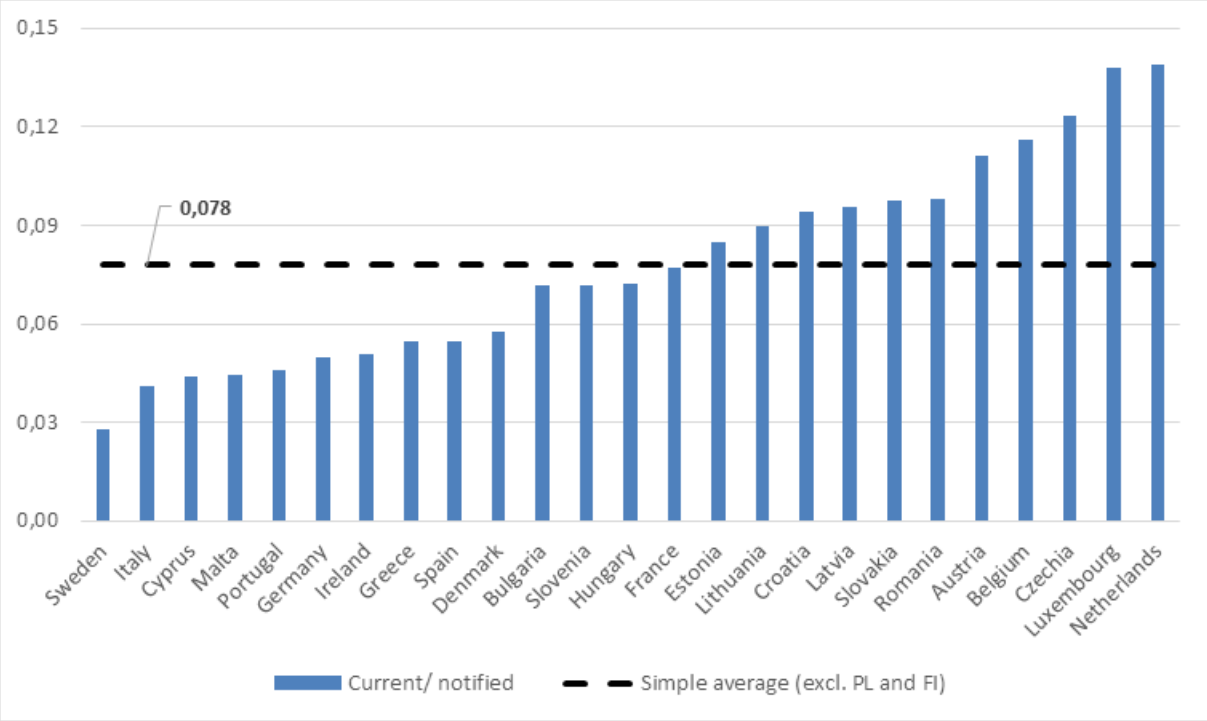
[119] In case of rates expressed locally in currencies other than the Euro, the average of the relevant exchange rate from 1 September, 1 October and 2 November 2020 was used. There was no exchange rates published for 1 November 2020 as this was a Sunday. Accordingly, the rates published on the following first weekday was used.

[120] Poland at 0.48 cent and Finland at 2.80 cent. The Commission adopted a recommendation under Article 7a of the Framework Directive against Poland's failure to comply with the TRR (case PL/2019/2156, Commission decision C (2019) 5571). Prior to that, the full market analysis notified to the Commission was assessed under case PL/2009/0903 (C(2009) 375). The Finnish NRA has not notified fixed termination rates since 2013, when the Commission vetoed its proposal to include fixed and mobile termination rates in the same market (case FI/2013/1498, C(2013) 8391).

[121] In Finland there are no (ex ante) price caps on FTRs. Fixed network operators have to apply cost-oriented prices. The obligation is monitored ex post.

[122] BEREC, Termination rates at European level, July 2019, p. 16.

Figure 9: Current/notified FTRs per country (euro cent)[123]



Note: Poland and Finland are outliers and not shown in the graph and not taken into account for the calculation of the average.

Source: European Commission.

The simple average of current/notified FTRs across all Member States is 0.193 cent. If the two outliers, Poland and Finland are excluded, the average decreases to 0.078 cent. The average of the 23 Member States applying pure BU-LRIC models[124] is also 0.078 cent.

The current/notified FTRs and the average of pure BU-LRIC rates are the reference points for establishing the implementation mechanism of the single maximum Union-wide fixed voice termination rate.

5.2 The single maximum Union-wide fixed voice termination rate

As shown in *Table 2*, the efficient costs estimated by the Axon fixed cost model are close to the current EU average (excluding Poland and Finland). According to the cost estimates under the selected scenario, Estonia is the Member State with the highest estimated cost of providing wholesale termination services at a fixed location (0.068 cent). Therefore, to ensure cost recovery for operators of fixed voice termination in all Member States in the relevant years (2021-2025), the highest value of 0.068 cent is selected as the relevant output of the Axon model.

Taking into account the relevant output of the Axon cost model, the feedback received during the modelling phase, the current/notified FTRs, in particular those based on pure BU-LRIC models, the Commission services consider a single maximum Union-wide fixed voice

[123] In some countries there are different regulated FTRs. The figure shows the lowest value. For Austria and Croatia, the value shown is the average of the peak and off-peak rates.

[124] Estonia, Finland, Germany, Latvia, Lithuania and Poland do not set the regulated fixed termination rate based on a pure BU-LRIC model.

termination rate of 0.07 cent as the most appropriate. This rate corresponds to the rounded value of the selected Axon result. The rounding creates a small security margin to account for possible inaccuracies in the cost models and future uncertainties that could not be fully reflected in the model and simplifies the implementation of the rate. This rate is the single maximum Union-wide fixed voice termination rate in line with Annex III of the Code.

The Axon cost model does not include the economic effects of the COVID-19 pandemic. Any possible long-term effects of which, if relevant for the efficient cost estimates required by the Code, would be captured in future revisions of the cost model.

5.3 Implementation modalities for the single maximum Union-wide fixed voice termination rate

The single maximum Union-wide fixed voice termination rate of 0.07 cent is close to the average of current/notified FTRs (0.078 cent, excluding Poland and Finland). Ten Member States (Cyprus, Denmark, Germany, Greece, Ireland, Italy, Malta, Portugal, Spain and Sweden) have FTRs below and 17 Member States have current rates above the single maximum Union-wide fixed voice termination rate (see *Table 4*).

Since the difference between the average FTR and the single maximum Union-wide fixed voice termination rate is less than 15% and many Member States have FTRs close to the single maximum Union-wide fixed voice termination rate, it is not necessary to apply a glide path as it is the case of mobile termination rates where the gap between the average rates and the efficient cost rate is much larger. Therefore, it is sufficient to grant a transitional period only to Member States where the FTRs are significantly above 0.7 cent. For these Member States, a short-term adjustment in form of a transitional period, as foreseen in the Code, is necessary.

5.3.1 Transitional period for the single maximum Union-wide fixed voice termination rate

Pursuant to Article 75(e) of the Code, the Commission shall "*consider the need to allow for a transitional period of no longer than 12 months in order to allow adjustments in Member States where this is necessary on the basis of rates previously imposed"*. There are several Member States with FTRs significantly above the single maximum Union-wide fixed voice termination rate. In this case, contrary to the glide path that has the purpose of bringing the rates applicable to all Member States closer to the efficient cost rates, a transitional period is justified to allow for adjustments in certain Member States to facilitate the implementation of the single maximum Union-wide fixed voice termination rate.

Feedback received

Generally, NRAs, BEREC and operators agreed in the public consultation that a transitional period may be necessary, depending on the final level of the single maximum Union-wide voice termination rates compared to current rate levels applicable in some Member States. The majority further agreed, that a transitional period of no more than 12 months would be justified when current rates are both above and below the single maximum Union-wide voice termination rates. No clear preference regarding the length of the transitional period can be derived from the public consultation, where some stakeholders argue that the full 12 months transitional period should be applied, whereas others argued that the length should depend on the difference between the current rates and initial level of the single maximum Union-wide voice termination rate.

The feedback received under "Have your say!" was diverse regarding the transitional period. Some respondents argued for a longer period (e.g. the same length as the glide path) and others agreed with the proposed approach.

The BEREC opinion supports the Commission services' approach of granting a transitional period to some Member States.[125]

Commission services' views

The Commission services consider that the need for a transitional period depends on the value of the single maximum Union-wide fixed voice termination rate relative to the current FTRs in the Member States. Where the gap between the single maximum Union-wide fixed voice termination rate and the applied current rate in certain Member States is sufficiently large it may be justified to grant a transitional period. The purpose of the transitional period is to allow necessary adjustments in certain Member States before applying the single maximum Union-wide fixed voice termination rate.

The single maximum Union-wide fixed voice termination rate of 0.07 cent is within the range of current FTRs and is close to the Union average (see Section 5.1).

For Member States *above* 0.07 cent (i.e. in total 17 MSs), a differentiated reduction of the current fixed termination rates is proposed. Some Member States will need a relatively small adjustment (up to 20% reduction) while others need a larger adjustment (above 20% reduction).

For Member States with FTRs between 0.07 and 0.0875 cent, a reduction of their current rates by up to 20% suffices to reach the cost-efficient rate of 0.07 cent. For these 5 Member States (Bulgaria, Estonia, France, Hungary and Slovenia), the single maximum Union-wide fixed termination rate of 0.07 cent shall apply already in 2021.

For the 12 Member States with FTRs *above* 0.0875 cent, an immediate decrease to the single maximum Union-wide fixed voice termination rate would require a reduction of more than 20%, which would be significant and potentially disrupting operators. It would run counter the objective of ensuring smooth decrease to the cost-efficient rate. Therefore, a transitional period during 2021 is justified for these Member States before reaching the single maximum Union-wide fixed termination rate in 2022. For 10 Member States[126] (out of the 12), a 20% reduction of their current FTRs represents a reasonable and sufficient adjustment towards the single maximum Union-wide fixed voice termination rate of 0.07 cent.

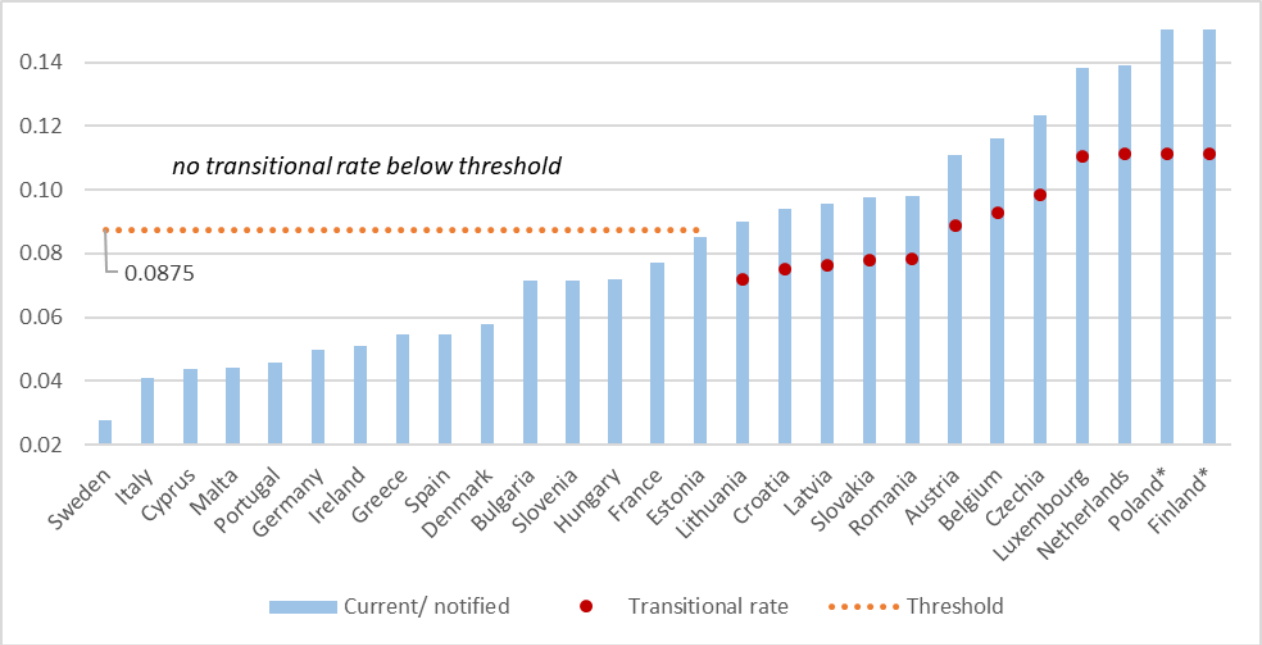
Poland and Finland are special cases because their current FTRs are way above the rates in other Member States and they are not based on a method set out in the TRR (i.e. pure BU-LRIC model or benchmarking). For them, a 20% reduction would be an insufficient step towards the single maximum Union-wide fixed voice termination rate. After a 20% decrease the Polish FTR would be still 5 times and the Finnish 30 times the single maximum Union-wide fixed voice termination rate. Further, a higher decrease is necessary and also justified because the current rates are the furthest away from the country specific efficient costs determined by the Axon cost model. Therefore, for Poland and Finland a specific transitional regime is needed. The highest FTR based on a pure BULRIC model is in the Netherlands. The Commission services therefore consider that the transitional rate for the Netherlands (0.111 cent) constitutes a reasonable and appropriate rate for Poland and Finland during the transitional period.

[125] BEREC opinion, BoR (20) 190, p. 18.

[126] Latvia, Lithuania, Slovakia, Croatia, Austria, Belgium, Czechia, Luxembourg, Netherlands and Romania.

For Member States with FTRs *below* 0.07 cent, a transitional period is not necessary. Given that the single Union-wide fixed termination rate constitutes a cap, operators will be free to smoothly adjust the termination rates they will charge through stepwise increases till they reach the single maximum Union-wide fixed voice termination rate or they may continue to apply the current termination rates.

Figure 10: Current/notified FTRs and transitional rates (cent)



Note: Poland and Finland are outliers, their current rates are not fully shown in the figure.

Member States with a rate below the threshold of 0.0875 cent will not be granted a transitional period and shall be subject to the single maximum Union-wide fixed voice termination rate already in 2021. Member States with a rate higher than the threshold of 0.0875 cent will be subject to a transitional rate in 2021.

The transitional period and the corresponding transitional rates will apply - from the first day of the third month after entry into force of the Delegated Regulation until 31 December 2021.

The table below shows the current/notified FTRs and the maximum rates for fixed termination during the transitional period in 2021.

Table 4: Current/notified FTRs and maximum FTR in 2021 (euro cent)

Member State	Current/ notified FTR	Maximum FTR in 2021
Austria	0.111	0.089
Belgium	0.116	0.093
Bulgaria	0.072	0.070
Croatia	0.094	0.075
Cyprus	0.044	0.070
Czechia	0.123	0.099
Denmark	0.058	0.070
Estonia	0.085	0.070
Finland	2.800	0.111
France	0.077	0.070
Germany	0.050	0.070
Greece	0.055	0.070
Hungary	0.072	0.070
Ireland	0.051	0.070
Italy	0.041	0.070
Latvia	0.096	0.076
Lithuania	0.090	0.072
Luxembourg	0.138	0.110
Malta	0.044	0.070
Netherlands	0.139	0.111
Poland	0.455	0.111
Portugal	0.046	0.070
Romania	0.098	0.078
Slovakia	0.098	0.078
Slovenia	0.072	0.070
Spain	0.055	0.070
Sweden	0.028	0.070

From 1 January 2022, the single maximum Union-wide fixed termination rate of 0.07 cent will apply in all Member States.

6 Application of the maximum Union-wide mobile and fixed voice termination rates

The Delegated Regulation, and therefore also the single maximum Union-wide mobile and fixed voice termination rates set therein, will start applying the first day of the third month after its entry into force, in order to ensure that operators have the necessary time to adjust their information, invoicing and accounting systems, and modify their respective agreements. Until then, the regulated termination rates applied in Member States at the time of the entry into force of the Delegated Regulation shall remain in place.

Two-part regulated termination charges[127], currently in place in some Member States such as Ireland, will no longer be possible from the date that the Delegated Regulation applies.

[127] Typically, termination rates are charged as a 'one-part charge', where the terminating operators charges a per-minute fee for terminating the call on its network. The 'two-part charge' includes two separate charges for the termination service, namely a call set up fee and a per-minute fee.

In order to ensure a uniform implementation of the single Union-wide voice termination rates, they should be understood as per minute charges (without VAT) and shall be charged on a per second basis.

Article 75(3) of the Code foresees that "*National regulatory authorities shall closely monitor, and ensure compliance with, the application of the Union-wide voice termination rates by providers of voice termination services*". This could include, among other tasks, ensuring that the single maximum Union-wide termination rates are applied by termination providers, specifying the national numbering ranges corresponding to non-geographic numbers to which the Delegated Regulation applies. NRAs may also resolve disputes between operators regarding the application of the single maximum Union-wide termination rates etc.

Annex I: Regulatory practice on termination rates

The **EU consultation procedure** (so called Article 7 procedure) requires National Regulatory Authorities (NRAs) to notify the Commission, the Body of European Regulators for Electronic Communications (BEREC)[128] and regulators in other Union countries draft measures they plan to introduce to solve market problems due to a lack of competition. These notifications should comprise (i) the definition and analysis of relevant markets, (ii) the designation of operator(s) having significant market power (SMP) and (iii) the proposed imposition, maintenance or withdrawal of regulatory remedies on providers of electronic communications networks or services. The main regulatory remedies are: access obligations (requirements to provide access to the SMP operator's network), transparency, non-discrimination, accounting separation (separation of accounts between various levels of business), and, most importantly for the purposes of this document, price controls at wholesale level.

The Commission has one calendar month to decide whether to (i) issue a no comments letter; (ii) issue a comments letter; (iii) open an in-depth investigation (Phase II). In particular, the Commission can start an in-depth review by sending a serious doubts letter to the concerned NRA if it has doubts that a national draft measure is not compatible with Union law or creates a barrier to the Single Market. At the end of Phase II, the Commission may (i) issue a recommendation, (ii) veto the NRA's draft measure (limited to the doubts concerning market definition of SMP finding, and (iii) lift its serious doubts.

The Commission's Recommendations, whether issued under Article 19 or under Article 7a of the Framework Directive, are not legally binding.

We briefly describe below a few specific examples which are the most significant to illustrate the challenges encountered in the regulation of termination rates in the Union.

Finland

The Finnish NRA argued that it was specifically prevented from the application of the recommended methodology by certain provisions of the national legislation. In its most recent measure on MTRs, the Finnish NRA (FICORA) – currently applying a top down Fully Allocated Costs model – explained that, based on the Finnish Information Society Code, pricing obligations should ensure that telecommunications operators make profits from the services they offer, termination included. Therefore, pure BU-LRIC could not be considered reasonable in Finland[129]. As regards FTRs, FICORA considers that FTRs should be deregulated based on the assessment of the national market. The Commission concluded, in line with BEREC's opinion that FICORA did not provide sufficient evidence that its notified measures fully comply with the policy objectives and regulatory principles of the Regulatory Framework.

In this regard, it is important to note that Finland decided not to participate in the data collection process for the Axon Cost model estimating costs of terminating calls in the fixed network.

Poland

[128] The mission of BEREC is to assist the Commission and NRAs in the implementation of the EU telecoms rules, to give advice on request and on its own initiative to the European institutions and to complement at European level the regulatory tasks performed at national level by the regulatory authorities.

[129] Case FI/2015/1718, C(2015)5006.

The Polish NRA (UKE) considers that the intention of the TRR was the convergence of FTRs and MTRs (within one country), rather than the setting of MTRs and FTRs at the efficient, pure BU-LRIC level in each Member State. By setting the MTRs at the recommended pure BU-LRIC level and maintaining the FTRs unchanged (i.e. above the efficient costs) UKE achieved the (internal) convergence of fixed and mobile TRs in Poland. Therefore, UKE considers being already very close to be aligned with the principles of the TRR. The Commission services however do not agree with such interpretation of the provisions of the TR Recommendation. In the latest notification, UKE indicated its willingness to set FTRs according to a BU-LRIC methodology, but proposed to set the actual rates in a subsequent decision, which *de facto* means that for an undetermined interim period the rate has been maintained at the current above-cost level[130]. After opening a phase II investigation, the Commission adopted a recommendation asking UKE to implement new FTRs based on the pure BU-LRIC cost model, specifying detailed and binding timeline for the development and finalisation of the pure BU-LRIC model including the introduction of the new rates based on its results. In the interim period, UKE should set the FTRs by reference to the benchmark of average FTRs costs, as calculated on the basis of pure BU-LRIC cost models by other EU NRAs without delay, and in any event no later than 31 October 2019. UKE did not follow this recommendation.

Germany

The German regulator's approach to setting MTRs was to use a 'BU-LRIC+' cost methodology, which as opposed to the pure BU-LRIC methodology, allows including common costs in the rate that operators may charge for termination. BNetzA justified its decisions not to follow the recommended pure BU-LRIC approach by alleging that the inclusion of common costs fell within its wider discretion to choose the most appropriate regulatory model and by stating that a pure BU-LRIC methodology would not be better suited to meet the policy objectives of promoting competition, the interest of citizens and consumers and contributing to the development of the internal market. Since 2013, the Commission has issued four recommendations under Article 7a FD expressing its serious doubts as to the compatibility of BNetzA's proposals with Union law and requesting BNetzA to apply cost-oriented MTRs in line with the TRR[131]. The Commission repeatedly stated that it considered that the draft measures, if adopted, could have created a barrier to the internal market. In issuing the recommendations addressed to BNetzA the Commission was always strongly supported by the BEREC, which considered that Commission's serious doubts were fully justified. Nevertheless, in each case BNetzA adopted its final measures without amending the proposals as recommended by the Commission. However, on 30 January 2017 BNetzA notified to the Commission new MTRs based on a pure BU-LRIC cost model[132].

Similarly, with regard to the **fixed termination** markets, since 2013 the Commission has issued seven recommendations under Article 7a FD[133] recommending that BNetzA set pure BU-LRIC rates. In November 2016, BNetzA notified a draft measure proposing to set pure BU-LRIC FTRs[134]. However, such measure did not set the actual rates, which were proposed

[130] The Polish measure was notified to the Commission under case PL/2019/2156.

[131] Cases DE/2013/1424, C(2013) 1266; DE/2014/1527, C(2013) 8634; DE/2014/1605, C(2014) 4291; and DE/2014/1666-1667, C(2015) 1924.

[132] Case DE/2017/1964, C(2017) 1367.

[133] DE/2013/1430, C(2013)5112; DE/2013/1460, C(2013)6884; and DE/2014/1642, C(2014)9568; DE/2014/1660, C(2014) 8366; DE/2014/1685, C(2014) 10126; and DE/2015/1816, C(2016) 1830.

[134] Case DE/2016/1945, C(2016) 8814.

only in a subsequent notification on 23 January 2017[135]. In this last draft measure, despite having developed pure BU-LRIC FTRs, and in light of the fact that the model result was considerably below the current average of FTRs in the Union, BNetzA proposed to adjust such rate by a benchmarking approach referencing against countries that applied a pure BU-LRIC cost model[136]. The Commission closed the case by a Recommendation under Article 7a FD arguing that BNetzA's proposed FTRs were not cost-oriented and did not reflect a price that would prevail in a hypothetical competitive market, which would promote efficiency, sustainable competition and consumer benefits[137].

In 2019, BNetzA proposed again to set FTRs equalling the average rate applied in the benchmark countries using a pure BU-LRIC model based on replacement costs and the modelling of an efficient modern network. BNetzA's own pure BU-LRIC cost model yielded a much lower rate of 0.0265 cent. Yet, BNetzA considered that the proposed benchmark FTRs better reflected the harmonisation objective of the TRR and of the future Commission Delegated Regulation setting a single maximum Union-wide voice termination rate to be adopted by the end of 2020 in line with Article 75 of the Code[138]. In line with previous cases, the Commission opened a phase II, but this time BNetzA withdrew the measure and subsequently notified an amended measure[139]. BNetzA proposed to apply a glide path which started in 2019 from the EU/EEA pure BU-LRIC benchmark FTR and applied linear reductions leading up to the cost-efficient rate calculated through BNetzA's cost model in the last year (2022) in case the single maximum Union-wide voice termination rates would not start applying before then.

Austria

In the context of Germany's non-implementation of the TRR (resulting in significantly higher TRs in Germany than in Austria), in February 2016 the Austrian regulator (TKK) proposed to allow Austrian operators to differentiate termination rates charged to foreign operators based on a reciprocity, i.e. higher price caps for calls originating in Member States which had not brought down MTRs and FTRs in line with the TRR. Austria itself had implemented the BU-LRIC model recommended by the Commission, without differentiating between different countries of origin in the Union. TKK's draft measure aimed to address the financial losses on cross-border traffic incurred by Austrian operators, in particular with German operators. Further to a Commission Recommendation pursuant to Article 7a FD concluding on the inconsistency of the draft measure with the non-discrimination principle and its deepening of the existing barriers on the internal market, TKK did not adopt the measure.

[135] DE/2017/1961, C(2017) 4294.

[136] According to BNetzA, such approach would enable to harmonise termination rates at Union level and to reduce the difference between individual rates in the different Member States, thereby contributing to the development of the internal market.

[137] The Commission considered that BNetzA did not provide any reasonable justification setting out why a very significant departure from the calculated pure BU-LRIC rate would still reflect efficient costs for termination services and thus represent a valid approximation of the true "as-if-competition" price for fixed termination in Germany. This indicated that despite BNetzA's intention to follow the recommended pure BU-LRIC methodology, the FTRs in Germany could not be considered in line with the TRR.

[138] Case DE/2019/2153.

[139] Cases DE/2019/2172-2173.

Annex II: Currencies other than the Euro

For Member States applying a different currency than the euro, the relevant maximum voice termination rates shall be converted in those currencies by applying the average of the reference exchange rates published on 1 January, 1 February and 1 March 2021 by the European Central Bank in the Official Journal of the European Union. The maximum termination rates expressed in those currencies shall be revised annually and updated by 1 January each year, using the average of the reference exchange rates published on the most recent 1 September, 1 October and 1 November.